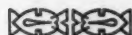


MOTOR AGE

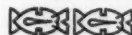
AMERICA'S FIRST DEMOUNTABLE RIM TEST

CHICAGO, Aug. 6—America's first demountable rim contest, conducted today by the technical committee of the Chicago Motor Club over the Chicago-Elgin-Aurora-Chicago century course, was won by the Diamond demountable, with a total of 5 minutes 36 $\frac{1}{2}$ seconds for the changing and readjusting of the four rims that were changed during the run. Second honors went to the Continental rim, mounted on a Packard roadster, 5 minutes 48 seconds being required for the four changes and adjustments at the end of the run. Third and fourth places were awarded to Fisk demountables, one set, fitted on a Knox four-passenger roadster, requiring 5 minutes 49 $\frac{1}{2}$ seconds for original changes and adjustments at the end of the run; and the other set, on a Thomas-Detroit roadster, taking 7 minutes 10 $\frac{1}{2}$ seconds for original change and final adjustment. Fifth honors were carried off by the Nadall demountable, 7 minutes 35 $\frac{1}{2}$ seconds being required for the changes and tightening of three attachers which had not been sufficiently tightened



Twenty demountable rims were changed in an average of 74.1 seconds per rim, five different crews of two men each working on five different cars. The quickest change was 53 $\frac{1}{2}$ seconds. The fastest change made by each of the five competing crews during the test were:

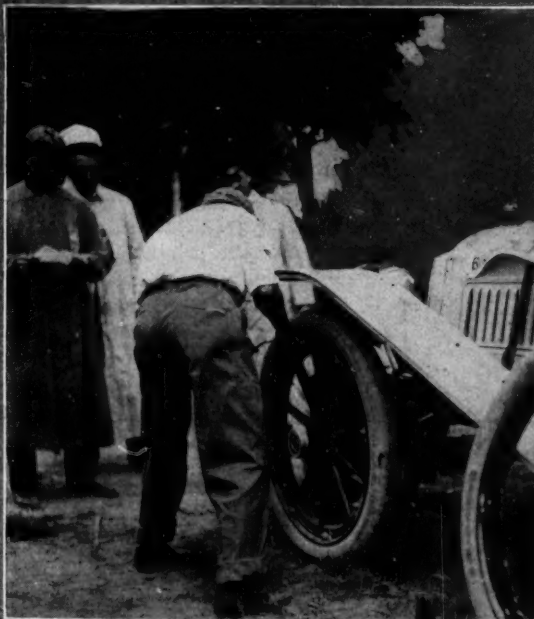
Fisk	53 $\frac{1}{2}$ seconds
Fisk	54 seconds
Diamond	59 $\frac{1}{2}$ seconds
Continental	62 seconds
Nadall	77 $\frac{1}{2}$ seconds



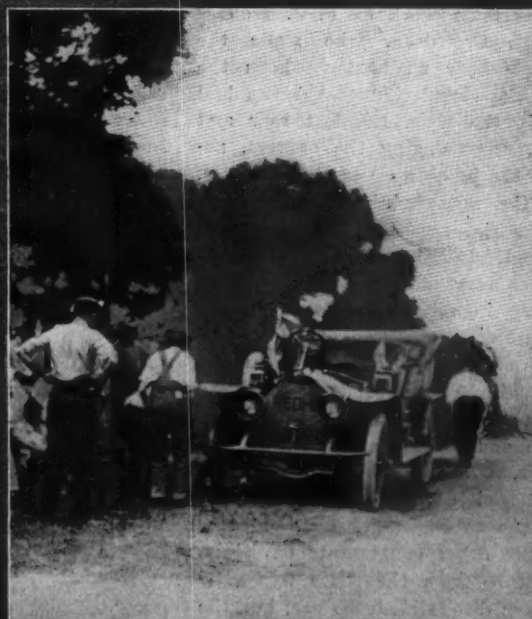
when the change was made. The Nadall demountables were on a Pierce six-cylinder touring car.

The object of the test was twofold: To determine, first, the speed of changing the different rims, four on each car; and, second, to determine the reliability of these rims as could be judged from 100 miles of road traveling over dusty gravel and stone roads at an average pace of 20 miles per hour. The technical committee of the club found it impossible, because of the absolute lack of previous contests of this nature, to take into consideration any other than these two phases of the rim contest, and its awards were based solely on these two angles.

The plan of the test necessitated the changing of all rims before Elgin, 42 miles from Chicago, was reached, and the remainder of the trip was to determine if the rims, as placed on, held securely, which was decided by a close examination of the rims at the completion of the run, when loose nuts and creeping rims were looked for. Wherever any of these were



CONTINENTAL CREW MAKING CHANGE OF RIM



DIAMOND, FITTED TO ISOTTA-FRASCINI, WINNER



MOFFATT AND CREWDSON MAKING A RECORD CHANGE OF FISK RIMS ON KNOX ROADSTER

discovered the contestants were required to tighten the nuts, and in case of creeping rims to loosen the rim and place it in its original position, which was determined by stamping with the center punch the rim and felloe. The time spent in this adjustment or tightening at the end of the run was charged double and added to that required for changing the four rims, the total thus obtained being the figures given in the accompanying table.

The quickest change was made by the Knox-Fisk, the crew of which changed the four in 3 minutes 56 seconds, which is an average of :59 per rim, a good performance, and one which brought out well the quick detachability of the tire as well as the team work of F. J. Moffatt and W. H. Crewdson, who made the change. This car would have been the winner at the completion of the run had not two of the rims, the left rear and right rear, crept during the contest, necessitating the jacking up of these wheels, loosening the nuts holding the rim and slipping the rim to its original position. In this readjustment :31 $\frac{1}{2}$ was needed for the left rear and :25 for the right rear, adding in all 56 $\frac{1}{2}$ seconds to the original performance. This time, however, was doubled according to the rules, so that 1 minute 53 seconds in all were added to the original time.

The Diamond demountables, which won the contest, were attached to a heavy Isotta-Fraschini car which on the run from Chicago to Elgin got off the route and met the other contestants at Elgin. This departure from the route was sufficient to have disqualified the car, but the other contestants were willing that the Diamond crew should have a chance to do the work and agreed to allow it to make the changes at Elgin. Three of

these trials were made in Elgin, and the fourth after leaving Elgin. In the original change the quickest work of the Diamond crew, consisting of William Kesner and George Brewer, was :59 $\frac{1}{2}$, made on the right front wheel. The changes of these rims averaged 78 seconds per rim. In the final examination it was discovered that four of the nuts holding these rims had loosened, one on the left rear and three on the right front. In all 12 $\frac{1}{2}$ seconds were needed to tighten these, which added 24 $\frac{1}{2}$ seconds to the original performance.

The Continental rims, fitted to the Packard roadster, made the first change in 1:02, which was the fastest of the four, the workmen, F. W. Sandford and J. Hessler, showing particularly good team

work, the results of previous practice. In making the second change one of the men got ahead of the other, with the result that some of the nuts had to be loosened before the rim fitted properly, making the change in 1:58 $\frac{1}{2}$. The Continental averaged 79 seconds per rim for the four rims in the original change. At the completion of the run five loose nuts were detected, two on the left front rim, two on the right rear rim and one on the right front. In all 16 seconds were required for tightening these, thereby adding 32 seconds to the original performance of the rims.

The best time made by the Southmayd-Wilcox combination with the Fisk-Thomas-Detroit was :54 flat, $\frac{1}{4}$ of a second above the record made on the Fisk-Knox. The average time per rim on this car was 60 $\frac{1}{2}$ seconds per rim. At the final examination three of the rims had crept, and in readjusting these the following time was required: :29 $\frac{1}{2}$ for the left front, :35 for the left rear and :28 $\frac{1}{2}$ for the right rear. This added 1 minute 33 $\frac{1}{2}$ seconds to the original time, which when doubled made 3 minutes 6 $\frac{1}{2}$ seconds.

The quickest change made by Paul Hoffmann and J. Vilas on the Nadall demountable was 1:17 $\frac{1}{2}$. The average time per rim was 93 $\frac{1}{4}$ seconds. Changes on these rims were greatly hampered by the use of a ratchet wrench which was worked backward and forward, necessitating three movements of the wrench for each complete rotation of the nut. All of the other contestants used the breast wrench, which operates the same as a brace and bit for boring holes. A further handicap was that this rim carried threaded valve covers, which had to be removed in changing each rim with the exception of one; whereas the only other contestant to have



MOFFATT AND CREWDSON

a valve piercing the felloe was the Continental, and on these a valve cover was not used. The two Fisk and the Diamond used blind valves, by which is meant in the case of the Fisk that the valve came out horizontally through the side of the demountable rim, and in the Diamond the radially positioned valve stem was cut off flush with the rim, so that in these demountables no trouble whatever was caused by the valves.

When the Nadall demountable was given its final examination it was discovered that three rims were in perfect condition and no change had been made in the fourth from the time of its attachment, but an examination showed that three of the nuts on three expanders had not been screwed as tightly as the others when the change was made, and the technical committee required these to be tightened, 17 seconds being consumed in doing so. When making the original changes only one tool was permitted, but the assistant used a tool tightening four of the expanders. This was in violation of the rules and the committee required them to be loosened during the final examination and the time required to tighten them taken. This operation, together with tightening the other three expanders, added 40% seconds, which doubled into 1 minute 20% seconds. The average time required for each of the rims, including the original time and that added at the final examination, is as follows:

	Time in seconds
No. 1—Fisk-Thomas-Detroit	107 11-20
No. 2—Nadall-Pierce	113 19-20
No. 3—Continental-Packard	87
No. 4—Diamond-Isotta	84 2-20
No. 5—Fisk-Knox	87 9-20

While the contest took into consideration only the time required to change and the reliability as indicated by 100 miles of road service, the contest brought out many interesting facts relative to the de-

mountable rim, which is very much of an unknown quantity in America. The quick detachability and attachability comprise one factor, and the ability to withstand road work another. In detaching the rims the Fisk crews demonstrated with phenomenal alacrity, the No. 1 crew removing a rim in :18 and the No. 5 brigade repeating this performance twice. The Diamond rims were taken off in :22, :39, :46 and :21% respectively. The Nadall rims were removed in :35, :37% and :39 respectively, the time not being taken for the removal of the first rim. The Continentals were removed in :25%, :26% and :28% respectively, the time not being taken for the removal of the first rim. Time on the No. 1 Fisk-Thomas-Detroit for removal was :18, :18 and :21, and on the No. 5 Fisk-Knox :24, :18 and :18 respectively.

In looking over the four makes of demountables competing it was noted that

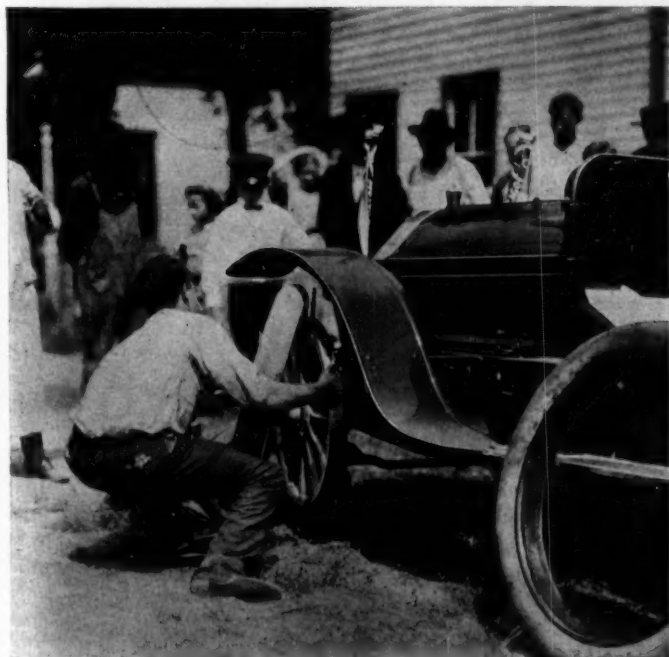
tightens the rim in position. In brief, it is a wedge action, the wedge being forced between the inclined permanent and demountable rims by the tightening of the nuts. The Continental principle is the same, except that several separate wedges are used, which are forced between the permanent and demountable rims at one side, there being one wedge for each bolt. In removing these rims all the nuts and the majority of the wedges are taken off, although it is possible by removing half of them to slip the rim over the other half without removing them. In the Diamond rims are a series of radial lugs on one side of the demountable which slip over transverse bolts through the permanent wheel felloe and a set of nuts hold the rim in position. In the Nadall rim are six shoes 1 inch wide and 3 inches long, mounted on stems 3 inches in length, which are fitted radially at regular intervals in the wheel felloe. The periphery of these shoes

STATISTICS SHOWING TIME RESULTS IN DEMOUNTABLE RIM TEST

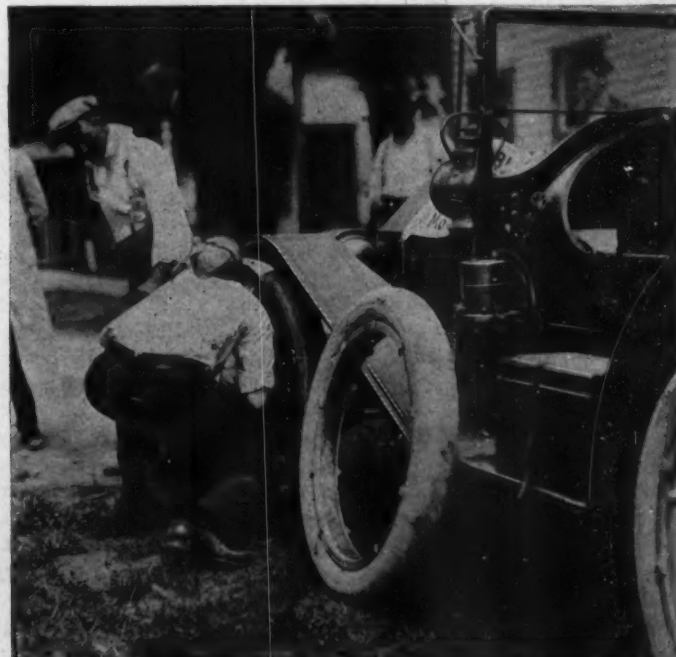
No.	Name	Car	Car Wt.	Left front	Left rear	Right front	Right rear	Total
1—Fisk	Thomas-Detroit ..	3,040	1:11 3-5	:57	1:01 1-5	:54	4:03 4-5	
2—Nadall	Pierce Six	3,955	2:02 2-5	1:17 2-5	1:25 2-5	1:29 4-5	6:15	
3—Continental ..	Packard	3,230	1:02	1:58 1-5	1:05 2-5	1:10 2-5	5:16	
4—Diamond	Isotta	4,335	1:01 2-5	1:26 1-5	:59 2-5	1:45	5:12	
5—Fisk	Knox	2,810	1:07 1-5	:57 2-5	:53 1-5	:58 4-5	3:56	

on four of them are loose nuts which are taken off and must fall on the ground or be held in the hand while the rims are being changed. On the Nadall rim there is not a loose part that comes off except the valve cover. The Fisk rims are secured by an expanding rim of V cross section which is forced into an opening at one side between the wheel felloe and the demountable rim. The tightening of a set of nuts on bolts passing horizontally through the wheel felloe and the V band

is curved, with a slightly shorter radius than that of the inner surface of the demountable rim, and in the rim are cut arc-shaped sockets to receive the shoes. The stems of the shoes thread into a sleeve in the wheel felloe so that by tightening a nut on the end of the stem, which protrudes through the felloe between the wheel spokes, the shoe is forced into the socket in the demountable rim, thereby anchoring it. The principle is unique and the car weight rests on the shoes.



NADALL RIM ON PIERCE-ARROW—PAUL HOFMANN WORKING



THOMAS-DETROIT FITTED WITH THE FISK RIM

PARISIAN GOAL REACHED BY THOMAS CREW

PARIS, August 1—Paris was dozing; it was too early for the theaters and although dinner was over there was no necessity to hurry away from the coffee. The policeman at the corner of the street pricked up his ears, looked down the dimly-lit Faubourg Poissoniere, pulled out his white baton and prepared for action; he had heard the defiant note of an open exhaust. But before the baton could get into action, the noisy exhaust was joined by a shrill call on a mouth trumpet, a travel-stained motor car swung into the boulevard and pulled up sharply at the door of the *Matin*. The New York-Paris race was finished—the Thomas Flyer, America's champion, was victorious.

Paris was deserted; the *Matin* furniture had been wrapped in dust sheets for the night. But the city lived up to its reputation by assembling a crowd at a moment's notice, and the newspaper had the champagne ready to be uncorked when Schuster, Muller, Hensen and McAdam, the bronzed occupants of the uncomfortable-looking car walked upstairs to report their arrival.

When the simple ceremony was over, for the *Matin* had apparently lost enthusiasm and made no pretense at drum-beating, twilight had changed to night and the order was given to run to Fournier's garage, the last resting place on the long journey. As the car sped down the boule-

matum was lighted lanterns or the police station. McAdam was for the latter; Schuster had had enough roughing. During the hesitation the pilot who was running ahead on a bicycle, returned, pushed a way through the gathering crowd, mounted the running board and displayed a light on the Thomas Flyer.

"Allez," and down the boulevard the

ostok to Paris, with a car that had already undergone the rough usage of a trip across the states in winter and a journey over mountainous Japan, in 69 days. For the Italian car there were a perfect gasoline supply, fairly good weather, pilots through France and into Paris, and only three men to be carried. For the American car gasoline had often to be sought in drug stores



FRENCH CROWDS EAGER TO SEE AMERICAN CHAMPION



THOMAS FLYER AS IT LOOKED AT END OF RACE

wards, exhaust and trumpet vying with each other for supremacy, a policeman rushed into the roadway and yelled "les lanternes." Schuster sped on. One hundred yards further another arm of the law attempted to stop the car. Schuster drove straight ahead. A third and a fourth followed suit, then one bolder than the rest stepped into the road way, displayed that formidable baton and refused to budge from his position.

St. Chaffray attempted to explain; but the Paris police force had no more enthusiasm for the New York-Paris victor than official French motordom. The ulti-

car shot to a rousing cheer from the crowd.

Having left New York at noon on Tuesday, February 12, the triumphant Thomas had occupied 169 days 2 hours in its trip of 20,000 miles across America, into Alaska, over the Pacific, across Japan and through Asia and Europe to the French capital, making the longest continuous run ever made by a motor car and certainly the most difficult ever undertaken in the history of the sport.

Prince Borghese, winner of the Pekin-to-Paris race, occupied 62 days in linking the east with the west. Schuster and the Thomas did the longer trip from Vladiv-

and elsewhere, rainy weather accompanied the car, much time was lost at the customs and finding the highway from Belgium to France, a detour took the car over rough paving stones instead of the macadam highway which runs into Paris, and in addition to driver and mechanic two passengers were carried.

Four days before the Thomas ran into Paris the German Protos, with Lieutenant Koeppen at the wheel, stopped in front of the *Matin* offices, having covered the distance separating Vladivostok from Paris in 65 days. The German pilot put in a claim for first prize on the ground that he was the first to reach Paris, but the organizing committee pointed out that it was not usual for a competitor to cut out one of the most difficult portions of a trip, slip in again later and claim the first prize. Taking the train over the Rockies and avoiding Japan had disqualified the Protos, and that disqualification could not be removed even though brilliant work had been done on the run from Vladivostok. The special prizes offered in Moscow, St. Petersburg and Berlin for first arrival in those cities without any reference to the whole journey, naturally fall to the Protos, but the victor in the New York-Paris run is undoubtedly the Thomas Flyer. After 24 hours' hesitation the *Matin* realized this and made an official

announcement to that effect, maintaining, however, that the car must continue to New York before it can be considered to have finished its trip. It goes without saying that the entire crew is only too anxious to get the first steamer for the land of the stars and stripes. The 150 miles of sandpapered road from here to Havre are not likely to cause any trouble.

When the official reception took place at the Matin at noon on the day following the arrival there was enough enthusiasm

by rail from Ogden, Utah, to Seattle, the rough journey across the states having completely disabled it. We had a lead on the de Dion and the Züst, and on that account after reaching Seattle went ahead to Valdez in order to see for ourselves what conditions were in Alaska. It was decided to abandon the Arctic portion of the journey, orders coming that the route should be across Japan, to Vladivostok, then through Asia and Europe to Paris.

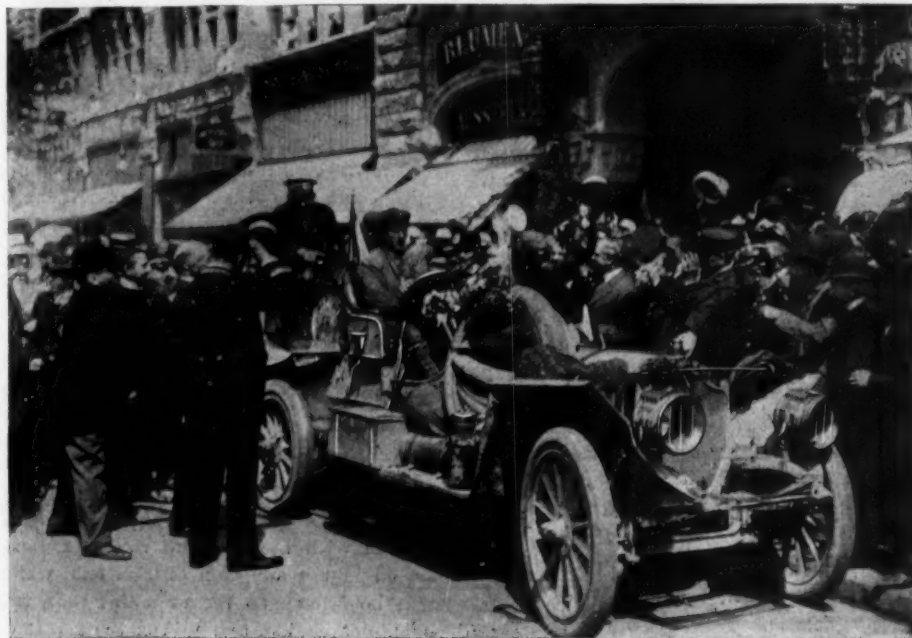
"The day I returned to Seattle I met

Flyer and the German Protos, the latter finally being successful, thanks to the rebuilding at Vladivostok and also the excellent manner in which it was handled on the journey through Siberia.

"Japan was a picnic, with a few scares thrown in when the narrow, flimsy bamboo bridges had to be crossed, and some strenuous calls for the low gear on the mountain passes. Nevertheless, the kindly hospitality of the natives caused forgetfulness of all the difficulties, leaving only the memory of the picnic.

"The trouble began when Vladivostok was left behind. The roads were not any worse than in America, but when at home we could always count on food and a clean hotel at the end of the journey. In Manchuria and Siberia there was neither, the hotels being bug-ridden hovels that made one glad to sleep on the verandah, in stables, in wagons, on the ground, anywhere in fact, but under the roof of a house. Food was as bad, the staple article of diet apparently being a coarse black bread, the crust of which could be eaten, but the inside of which was absolutely indigestible. Eggs could be obtained sometimes, tea always, coffee never.

"Rain accompanied us when we left Vladivostok and remained with us for 18 days in succession. At that time we had not taken to the railroad track, but were endeavoring to push along over the soft boggy country. On the first day we covered 12 miles, the second about the same distance and the third a little less.



GERMANS WELCOME AMERICAN CREW IN BERLIN

in the streets to keep the policeman busy all the time, but not a sign of any kind that the official motor world had read of the arrival of the American car. The crowds cheered, struggled for souvenirs, and elbowed one another in their endeavors to find a vacant place on the bonnet for another signature. Those who make, sell and deal in cars shrugged their shoulders and remained sullenly at home.

George Schuster had not changed into a dress suit as he took his first meal in Paris in the fashionable Grand hotel, for the simple reason that he did not possess one. The four men had four suits among them and they each wore them, the only extras being a few articles of linen stuffed into a small grip. But it was an interesting story of hardship and adventure overcome by pluck and determination that was told in one corner of the dining hall on the night of arrival, interrupted now and then by some visitor who introduced himself as an American and offered his congratulations as such.

Naturally the American driver was disappointed that the German car should have forged ahead on the last portion of the journey and was as desirous of giving his explanation as the listeners were of hearing.

"When we reached San Francisco," said Schuster, "the Protos was being shipped



SCHUSTER AND MILLER OF THE THOMAS CAR

Koeppen at the steamship office, where I learned he had just arrived and was expecting his car by rail the following day. The Züst, de Dion and Thomas sailed together for Kobe, in Japan, crossed the island to Asougar, steamed to Vladivostok, and there found the Protos rebuilding under the care of men sent out from the factory. The German spent 17 days in Vladivostok fitting out; the American spent 4, the two cars leaving on May 22, the Protos at 8 a. m., the Thomas at 11.

"From this point there was a continual struggle for victory between the Thomas

Before we were many miles out of town we overtook the Protos stuck in the mud, pulled it out by means of a tow line and left it to resume the race as soon as possible. After 3 days' traveling we reached Nikolsk, went on the railroad track, although permission had not then been accorded, but when 100 versts further on stripped our bevel gear and had to lie up for repairs. The Protos, coming along slower, received our permit for traveling on the track and in this way saved itself a long grind through the mud. There were places where traveling on the rail-

road was good; there were other spots where it was so shaking that I thought my teeth would drop out of my head. The ties were not sunk, but each one raised a considerable distance out of the ground and just wide enough apart for the wheels to drop in between them with a thud and be pulled out again with a jerk. Our first accident occurred on a curve where the ties were just sufficiently close together to allow both front and back wheels to drop in together and remain locked. In the fearful wrench which the car received the bevel gear stripped.

There were some narrow escapes with trains, and at one time the withdrawal of permission to use the track owing to the Protos having held up the express for 4 hours. After passing Kharbin, in Manchuria, where we left all the clothes excepting those we stood in, with orders that they should be shipped to Paris, we had some rough traveling, during which we stripped the second speed gear. A spare was telegraphed for and I went back to Kharbin to get it. It failed to arrive and I returned to the car to find that in the meantime Muller had put in a couple of stumps to replace the missing teeth. With this makeshift repair we continued, after ordering the spare part to be shipped ahead to Omsk.

"Later our repair broke down, and in order to get the spare part I had to travel 658 versts by relays of teams, a journey that was done in 4 days by changing teams every 90 versts. There was a reason for the hurry, the Protos then being in our rear but rapidly drawing up. I wished to get back and make the repair before they caught us, but was not able to do it, the car passing me when I was within but a few miles of the end of the return journey. I reached the car at 1 o'clock in the afternoon; at 4 o'clock we were away again. At Moscow we were held up for 1 day by repairs to the clutch shaft, and again after leaving Berlin lost some hours doing the same repair work."

"And how did the motor stand it?" inquired one of the listeners.

A smile spread over the face of the driver as he replied with justifiable pride: "Perfectly; we dismounted it at Chicago in order to verify the main bearings, put in a new set of spark plugs that somebody gave us, and have not touched anything since. Even the spark plugs are there as good as on the day they left Chicago."

"How were supplies of gasoline and oil arranged for you?"

"There was supposed to be a complete train of gasoline stations across Siberia," replied Schuster, "the arrangements being in the hands of the person who supplied the Pekin-Paris contestants last year. Unfortunately they were not perfect this time, the gasoline sometimes being there and sometimes being entirely absent. When the supply failed it was our business to search around town until we could find some; not being certain of the next

stage we frequently filled the tank of the car and carried a reserve supply with us in large bottles, each man holding a bottle on his lap, there being no room for it on the floor of the car for the supply.

"Right from Vladivostok to Moscow the order was to push ahead as fast as possible. We had no need for lanterns, for a gray light lasted until 11 o'clock at night and it was daybreak again at 3 o'clock. When Nijni-Novgorod was reached our difficulties practically ended, for we struck roads that in comparison were so good that we imagined we were on feather beds. We had to pay duty entering Germany and on leaving the country had to visit three different towns before the amount was returned to us. Ten minutes after we got it we had to hand it out to the Belgian authorities, from whom we were reimbursed on the first request. Finally entering France on our last day's run from Liege, 1,113 francs had again to be deposited as duty on the car. Getting near Paris we missed the road and instead of the macadam highway had to travel for a considerable distance over rough granite pavé that cut down our speed considerably. Though there were so many roads to Paris nobody on the route appeared to know which was the good one."

"How were you treated along the way?"

"Well, there was no hostility anywhere, if one can regard the attacks of insects as non-hostile. We have all a lively remembrance of the thousands of creepers that attacked us in some of the Siberian hotels, where cleanliness was an unknown quantity. In one German town the landlord of the hotel looked us over when we asked for a dinner then led us away to the servants' quarters. We forthwith removed over to the rival establishment on the other side of the street and were royally received."

"What about Alaska?" queried somebody.

"Time to think about that when airships are perfected," exclaimed Captain Hensen.

"There was as much hardship on this trip as any of us desired," exclaimed Schuster. "At times I doubted whether any car would get through."

DEATH OF CECIL EDGE

London, Aug. 1—Cecil Edge, a member of the firm of S. F. Edge & Co., and a cousin of the head of the house, died last Tuesday, after a short illness. Mr. Edge, like his cousin, was a noted driver, having first served as S. F. Edge's mechanic in the 1902 Gordon Bennett. In 1904 he took up his career as a driver, taking part in many road races, tours and hill-climbs. His last appearance in competition was at Brooklands a year ago, when he finished second in the Belgium plate and third in the Heath stakes. Mr. Edge was 28 years old at the time of his death.

TRADE MEETINGS HELD

A.L.A.M. Talks Quick Detachable Standard Rim and A.M.C.M.A. Committee Discusses Shows

New York, Aug. 7—Two important trade meetings were held here this week, one by the A. L. A. M., which talked over a quick-detachable standard rim, while the A. M. C. M. A. show committee discussed the Grand Central palace affair. The Seldenites started out by electing Colonel George Pope, treasurer of the Pope Motor Car Co. and the Pope Mfg. Co., treasurer of the A. L. A. M. to succeed H. H. Franklin, whose resignation was tendered to and accepted by the meeting.

The recommendation of the rim and tire committee that a quick-detachable rim be adopted was accepted. The mechanical branch of the licensed association has been working on this rim situation for the past year and has felt the need both for the individual users and manufacturers of a standard quick-detachable rim which would take both a clincher and quick-detachable shoe of any make, thus minimizing the existing inconvenience of having to have a shoe of one make to fit a given rim. After experimenting with all the quick-detachable rims, cooperation with the tire and rim makers resulted in the adoption of this rim, which will be known as the standard universal quick-detachable, and this is the result of hard and persistent efforts on the part of the tire and rim makers to get something which would be adopted by all manufacturers both in and out of the association. This rim is the same one which was discussed at the meeting of the National association the day before and which was pronounced satisfactory by the members of that association. M. J. Budlong and R. D. Chapin were appointed additional members of the tire and rim committee of the licensed association, of which A. L. Pope is chairman.

A report from the show committee was made with action by the board approving the work of this committee resulting. At the next general meeting, which will possibly be held the early part of September, awards for space for the Madison Square garden show will be made. It was recommended that the usual method of allotment be adopted, which is according to the amount of business done from July 1, 1907, to July 1, 1908. The report of the hand-book committee was accepted and work on the 1909 hand-book will begin at once, as several of the companies have already forwarded photographs and specifications of the sixth edition of this book.

Designs for the decorative part of the ninth motor car show, to be held at Grand Central palace, opening New Year's eve, were submitted to the show committee of the American Motor Car Manufacturers' Association at its meeting. Four original

schemes were considered, but no definite decision will be made until another meeting to be held within 2 weeks. There was a general report of the progress that has been made in connection with the show which is conducted by the American Motor Car Manufacturers' Association with the Importers' Automobile Salon and the Motor and Accessory Manufacturers. E. Rand Hollander, a member of the show committee, representing the importers, is in Europe at present, and while abroad will arrange for the foreign exhibits, which will be more complete than ever before, as the show here comes 4 weeks after the Paris exhibition. It was decided that a trade ticket plan would be followed this year that would be more liberal to the exhibitors. The plan for the demonstrators that worked so well last year will be retained. It was decided to have all the main floor and part of the first gallery occupied by American and foreign pleasure vehicles. The taxicab division will be on the first balcony along with the commercial vehicles and the motor cycles. The Motor and Accessory Manufacturers will be on the first and second balconies. There is no cellar or basement in connection with the show, the lower part of the Grand Central palace being a station of the New York Central railroad.

GROWTH OF THE A. A. A.

New York, Aug. 7—At a meeting of the executive committee of the American Automobile Association held Tuesday the Oklahoma Automobile Association, with about 200 members, was admitted to membership, making the twenty-fifth state organization now affiliated with the American Automobile Association. There also was elected a long list of individual members scattered throughout many states. The continued rapid growth of the association was brought out through the report of Secretary Frederick H. Elliott, which was presented to the committee. The secretary's report shows that more than a score of newly organized clubs had been elected to membership since the last meeting of the executive committee. The additions are as follows:

NEW YORK STATE AUTOMOBILE ASSOCIATION—Saratoga Springs Automobile Club, Automobile Club of Cortland, Automobile Club of Oneonta, Niagara Falls Automobile Club, Automobile Club of Jamestown, Automobile Club of Glens Falls, Riverside Motor Club, Automobile Club of Batavia.

PENNSYLVANIA—Automobile Association of Munroe County, Automobile Club of Franklin.

MASSACHUSETTS—Lowell Automobile Club, Automobile Club of Winchendon, Fall River Automobile Club.

NEW JERSEY—Elkwood Park Automobile Association.

CONNECTICUT—Automobile Club of Rockville, Automobile Club of Willimantic.

MINNESOTA—Automobile Club of Waseca, Brown County Automobile Club, Rice County Automobile Club, Anoka Automobile Club, Rochester Automobile Club, Austin Automobile Club, Kenyon Automobile Club.

It was further announced that the clubs in several middle western and southern states are now perfecting state organizations which will shortly apply for membership in the national body.

CHICAGO TO TRY AGAIN

Fifty-two Nominations Received for Motor Club's Postponed Hill-climb at Algonquin

Chicago, Aug. 12—The Chicago Motor Club is going to make another attempt to pull off its third annual hill-climb, which was postponed from last May until the coming Friday because of the continued rain of the late spring. Now, however, it looks as if the local organization is still in the bad graces of the weather man. After nearly a month without anything but a drizzle in this section, a miniature tornado struck town last night, the storm being the most severe of the season. Today the thunderstorms have continued, and while the predictions call for "cool and clear" tomorrow, there are some croakers along the row who predict another postponement.

Despite the gloomy outlook, though, the motor club is going ahead with its plans. Chairman Root of the contest committee is in camp at Algonquin, where the climb will be held, and here in Chicago there is an assembling of forces that makes it seem possible there will be some exciting work in the double contest, providing the weather clears. The entry list is a good one, despite the postponement. Originally there were eighty nominations, a record, but when the field was reclassified it was found that twenty-eight had withdrawn. This leaves fifty-two to battle for the honors in the handicap and free-for-all events, in addition to the Algonquin cup, which the citizens of that town have hung up for the fastest time and which must be won three times.

Prominent among the absentees is the White, which is out because of the accident to Walter White, who is still in the hospital at Cincinnati, waiting for his leg to mend.

There are other good ones left, though, to give battle for the trophies and several 1909 cars will be given their initial tryouts. The new Chalmers-Detroit 30 goes into action for the first time outside its home town, while the new model O Apperson is billed for a debut. The Knox people have sent two of their new cars here and those who have seen the cars work say the big one is going to have more than a look in in the free-for-all in which it clashes with the Apperson Big Dick, the Stearns six and the Thomas Flyer six, the last named car to be driven by George Salzman, who will make his bow to Chicagoans. The Corbin is here and its nominators are ready to back their car against any one in its class.

All the classes have filled well with the exception of the amateur events in which only A. W. Greiner in the Thomas-Detroit and G. F. Sulzberger in the Stearns are the gasoline representatives. There are five motor buggies in class A; the Brush, Jack-

son, Buick and Chalmers-Detroit in class B; the Wayne, Stoddard-Dayton, Maxwell, Moline, Corbin, Apperson and Grout in class C; the Buick, Jackson, Stoddard-Dayton, Diamond T, Thomas-Detroit, Tinscher and Kisselkar in class D, and the Thomas Flyer, Apperson and Pierce-Arrow in class E. About the same cars will compete in the free-for-all, in which straight time will decide the winner.

PREMIER STILL CENTURYING

New York, Aug. 11—The driver to whom is allotted the task of making 100 miles every day for 100 days naturally finds much monotony in the task, but with it all a great deal of variety and new things each day. Such at least is the experience with the Premier century car. Since the Glidden tour the century car has spent its entire time in and about Boston and New York, and on yesterday left New York, crossing New Jersey, en route to Philadelphia. In an interview with Moore, who is driving the century car, one is astonished to learn of the difficulty to be confronted, in attempting to run off a century a day in the east, and Moore expresses a very decided desire to return to the western plains. The marking of the car indicating that it is performing the task of 100 miles a day for 100 days, while modest, is sufficient to be a violation of the rules and regulations governing the park systems in some of the large eastern cities, and as a result, the driver of this car has found difficulty in knowing where to go as well as where not to go, to reel off the requisite number of miles, and at the same time avoid falling into the clutches of the law. The Premier's departure from New York in reality marks the homeward journey of the car, the return schedule including such places as Philadelphia, Wilmington, Baltimore, Washington, Harrisburg and Pittsburg. The hundredth day will probably be spent in one of the western cities, though this has not been definitely determined.

TIRE MEN TALK PRICES

Cleveland, O., Aug. 11—In a continuation of the effort to put a stop to price-cutting, another meeting of the tire manufacturers was held in this city today at which ways and means for putting an end to this practice were discussed. Nothing very definite was decided upon and it is thought that another meeting will be held some time before September 1. At the meeting today, which was fairly well attended, the impression prevailed that the best method of stopping the price-cutting would be to cut the dealer's percentage of profits, thus giving him practically no opportunity to slash to the consumer. It is possible also that the list price will be shaded somewhat next year. Any changes in the list prices of tires will go into effect September 1. Any changes in dealers' discounts will also be announced at that time, it was stated today.



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STUDYING THE HIGHWAY DUST CLOUD AND ITS CAUSES

THE suburban resident and the inhabitants of the quiet, sequestered country town and village, who follow the even tenor of their way, far from the maddening strife of the city rush, have during the past couple of seasons arrayed themselves against the motorists and motoring in general because of the unreasonable pace at which many of the drivers pass through their residential and city quarters. Hot has been the warfare waged by these people against the car men, the cause of contention being the endangering of the life of the citizens. This has constituted chapter one, which is yet far from completion in many parts of the country. There is, however, a chapter two, the introduction to which has already been written in a few eastern towns and villages and which, while a suitable author has not been discovered in other parts, sufficient material—conscious in the minds of some and unconscious in the minds of others—exists to form a dozen chapters; in fact, a volume or so on the "Attitude of Dust Consumers Towards Motorists."

The Roadside Dust Bath

GOOD cause already exists for this condition of affairs. When two or three motor cars, not exceeding the legal limit, pass through a quiet village of 1,000 or more inhabitants, which is extenuated along both sides of a leading country highway, a dust cloud which fills the street from side to side, overspreads on the lawns, enters the doors and windows of the residences and copiously settles on the garments of all those who sit on the front steps or on the lawns, is raised. This dust cloud is not entirely the fault of the motorist and is partly the fault of those who are compelled to inhale its sickening breath. It is caused primarily by a bringing together of conditions unthought of when many of the present roads were built. The roads are at fault and the cars are at fault. Neither can be made perfect for a few years yet.

Disintegration—The Arch Enemy

IF we can't have the whole golden fleece, there is no reason why we should not have a part of it. Scores of villages and towns in the New England states have done this. In these cities tarvin, oil, or other specially prepared dust preventives, have been applied to the road surface with a result that no dust is raised with cars traveling at the legal limit or reasonably above it. These applications are expensive at first, but cheap in the long run. Their use eliminates the necessity of watering a road surface. Watering a road surface is expensive because of the salaries paid and the horse and wagon maintenance. Watering is much more expensive because of the injury it works the roads. The ideal road has a hard surface, one proof against disintegration, which is the destroyer of all highways.

Economical in the End

THE application of a dust preventive is different from water used. The preventive in an adhesive, tending to bind all the loose particles of the road surface into a crust which, if formed sufficiently thick, is proof against wear for considerable time. With a crust like this formed water is prevented from entering the road body and disintegration is consequently eliminated. As all things must wear, it is but natural that the shoes of horses, the iron tires of horse vehicles and the pneumatic tires of motor cars wear off the surface which is indicated by the minute particles which are torn from the surface by a moving car. This disintegration is much slower than where water is used on the roads of a town or city.

ROAD makers are at present struggling for a solution of the problem. The bithulitic people, in order to prevent disintegration, use but a uniform grade of broken rock in each roadway, which rock broken into three sizes is dried in ovens in order to remove the moisture from its pores. Once dried, it is dipped in molten bitumen of 210 or more degrees, this bitumen entering the pores from which the water was driven out. In this heated condition it is used for road making purposes, being applied in layers on a cement foundation with the coarsest rock lowermost and regular gradations to the surface. It is claimed when this hardens it congeals into semi-rock, into which water cannot permeate and therefore there is no breaking up of it when the frost comes because of the water in it freezing and expanding.

Creosote Block Ideal

IN foreign countries, and in America in limited quantities, the creosote block has come in for considerable use and makes an ideal road surface, being particularly quiet for horse traffic and proof against skidding in the case of motor vehicles. This block is of fairly long life if the creosoting is well done. This, however, has proven the difficulty in America. Instead of the creosote permeating through the entire block, it has reached but a short distance beyond the surface, leaving the entire center of the block as it was. When blocks of this nature are placed in a sand foundation, water eventually enters the center or non-creosoted portion of the block; a rot ensues and soon the block caves in, the pavement is ruined and creosoting condemned.

Wheels Responsible for Dust

BUT what about the dustless car? The road makers must not be the target for all censure and the motor car manufacturer permitted to pass without even being asked if the design of a car has any effect on its dust-raising proclivities. Experiments have proven, indisputably, that the great dust-raising feature of a machine is the wheel. The bigger in diameter the tire, the more the dust. What is needed most is a small diameter tire that will withstand wear and give length of service equal to that of the larger diameter.

Body Lines Small Factor

LOW frames, irregular mudpan construction, irregular body lines, irregular fenders, heavy overhang at the rear and rear gasoline tanks and tool boxes, all do their little in augmenting the dust cloud, but the work of these is not so much in picking up the dirt, or dust, off the road surface as in disturbing it and sending it off in whirls to the right, to the left and in counter-whirls. Experiments made prove this. A car running on street car tracks through a dusty street raises but little dust; take the car off the track and drive through the dust and the cloud fills the street.

Disk Wheels Superior

THERE are a few considerations in connection with motor car construction which by tests have shown considerable advantage in the crusade against dust. Disk wheels are immeasurably better than the artillery wheel, and the artillery wheel equally superior to spring wheels of different types. Wire wheels raise very little dust. The artillery wheel, with its broad spokes which act as fan blades, is constantly directing currents of air against the road surface, raising the dust. With the thin wire spoke this is greatly diminished and with the disk wheel eliminated. Good clearance is a proven factor in the anti-dust column. To this can be added a smooth under pan, free from downward projections.



CURRENT COMMENT



THE results of the recent grand prix race certainly seem not to warrant the continuation of the 155 mm. maximum bore rule for another year. The French designers who proposed and supported this rule have been the first to admit its defects; and, although they have been accused of self-interest and of wishing to establish such rules as will practically assure a French victory, their position is, nevertheless, quite justifiable. It is undeniable that tires under present high speed racing conditions introduce an extremely undesirable element of luck into the contest. In the list of proposed amendments one which has found considerable backing is to limit the stroke as well as the bore. S. F. Edge, the well-known English racing man, is quoted as saying that it is a mistake not to take the stroke into consideration, as it will result in engines of abnormal length of stroke, which are very severe on the mechanism and tires and at the same time cause a considerable amount of vibration throughout the chassis. "I feel sure that the tremendous failure of tires throughout the grand prix race was due, to a large extent, to the length of stroke employed in many of the engines," Mr. Edge concludes. A glance at the specifications shows that the average stroke of the engines increased from 6.08 inches in 1907 to 6.63 inches in 1908, in spite of the fact that the limited fuel consumption rules of 1907 seemed to favor long-stroke engines. It is hard to believe, however, that this increase alone was responsible for the terrible slaughter of tires. All designers have a pretty close realization of the maximum permissible piston speed, and when they increase the stroke they may be depended upon to decrease the maximum number of revolutions per minute in proportion. Besides, any increase in the stroke means an increase in the height of the engine, and consequent raising of the center of gravity—something never to be risked on a racing car. The true explanation of the unprecedented amount of tire troubles will very probably be found in the increased weight of the cars, which averaged 300 to 400 pounds heavier than those of last year. This extra weight was in most cases placed directly over the rear axle, with the idea of securing better adhesion. With the size and strength of the tires remaining the same, and the speed increased, the result might have been expected.

Another proposition, which seems to strike much more closely at the root of the difficulty, is to still further decrease the maximum bore. Mr. Edge proposes

127 mm., which translates to a few thousandths over 5 inches. Such a rule would certainly eliminate tire troubles, both by lightening the cars and by reducing their speed. The question then arises as to whether the reduction of the speed would not take away so many of the spectacular features of the race as to preclude any possibility of its being a popular financial success. Many of the constructors assert, however, that they can build cars of this size with a speed of 90 miles an hour, which ought to furnish enough excitement, and, owing to the greater regularity to be expected when the disturbing element of tires is removed, the finishes should be closer and more exciting. The danger to drivers and to spectators would be decreased, and as the engines would be held at their maximum power for a larger part of the time, the test for them would be even more severe. The list of entries would be more representative, as most makers could enter cars that would be practically stock models, and would thus avoid an expense at present often prohibitive. On the whole, the 127 mm. bore amendment seems well worth trying, and it should go far toward solving the problem of how to make motor car racing a sane and profitable sport.

While this year's Vanderbilt participants are limited neither in bore nor stroke, but must have a minimum and must not exceed a maximum weight, it is generally believed that the fourth race for the famous cup will be the concluding one wherein speed alone is unconfined, except by what strains and stresses the tires will withstand, which factor, of necessity, must contain something in the way of luck. As soon as a limit is placed on speed, it may be that the spectacular features in motor racing which attract the public will be extracted sufficiently to cause a diminution in interest. Furthermore, many makers, both here and abroad, are now convinced that racing has lost much of its value to the industry, though those who dissent are still industriously active and will continue to support those big events which take place near large cities and attract thousands of spectators, among whom are many possible buyers in possible plenty. It is safe to predict that over a million people will see the Vanderbilt race and the Long Island motor parkway October 24 next.



THE building of the Long Island motor parkway is of great significance to the American motor industry. In its influence, rather than the results accruing from its direct use, will be found a large part of its value, for if a special highway for motor cars can be built and maintained in one part of the country, there is no reason why similar enterprises cannot be set afoot wherever the population is such as to warrant it, and there are not a few parts of the United States where the motor fraternity is sufficiently numerous and progressive to support such an undertaking. Not the least part of its value will be found in the demonstration that it will afford of the fact that the dustless highway is a practical possibility of the near future, and its influence in this respect should not only prove of value to others backing similar enterprises, but to the course of highway improvement in this country as a whole, for the dustless road is as much of a necessity to horse traffic as it is to the motor cars. Since there will be no horse-drawn vehicles on this parkway, it will be possible to see just what effect the surface of the specially constructed highway will have upon tires and also what effect tires will have upon the road. Considered in whatever light it may be taken, the parkway is bound to be productive of valuable and lasting results. Its construction shows that the motor car having developed to a high standard, the creation of highways on a par with it is in order.

TIME was not the important factor in the Chicago demountable rim test last week, although it was utilized in determining the winner. What the test really proved was that with the demountable rim one can afford to laugh at the puncture demon, for with this modern utility one can stop, make a change of tires and resume the tour without much loss of time, without dirtying one's clothes or person and without loss of temper. That is the keynote to the situation. One does not object to using a reasonable length of time in making a change, but if in doing so this one perspires, gets his clothing dirty and comes out of the fray with ruffled temper, then he loses half the joy of motoring. It is possible to escape all this through the use of the demountable rim and if for no other reason than that the test demonstrated this fact, then it can be classed as an unqualified success. Of course great credit is due the winning rim and its makers long can cherish the honor of having captured the first official test of demountables in this country.

NEW YORK, Aug. 12—With the return of Jefferson de Mont Thompson, chairman of the A. A. A. racing board and Vanderbilt cup commission, from a brief vacation spent in touring New England, preparations for the Vanderbilt race have received an appreciable impetus. Mr. Thompson is confident from correspondence and assurances he has received from manufacturers that the arrangements the commission has made for the eliminating trial will not have been made in vain. Previous experience with the Vanderbilt race and the Glidden tour have invariably shown a tardiness in making nominations, the last day, as a rule, bringing the majority. Though the entries for the cup race will close on September 1, chance is given makers who later decide to enter the lists, to secure the privilege of starting by the payment of a double entry after that date up to October 1.

Chairman Thompson, General Manager Pardington, of the Long Island motor parkway, and other A. A. A. officials are coöperating with the Nassau county supervisors in their efforts to enforce the speed laws on the roads of that county. The conference at the Mineola court house was the outcome of the commission's pledge to back up the Nassauvians in the matter by way of showing well deserved reciprocity for their liberal mindedness in granting the use of their highways for the cup race and the practice and eliminating trials incident thereto.

It is probable that practice on the new course will be permitted candidates for the eliminating trial by the supervisors between sunrise and 7 o'clock in the morning after October 1. There will be, however, no let-up in the crusade that is about to be started against speeding on the county roads. Drivers of non-competing cars violating the laws in this respect will be arrested by the special motor cycle policeman to be put on permanent duty, and so will also drivers of cup cars who exceed the speed limit outside of the hours set apart for the practice. The cup commission is in hearty accord with this movement to protect the highways and will assist the supervisors in the enforcement of the law against both Vanderbilt race drivers and outsiders also.

A big demand is already in evidence for Vanderbilt race boxes on the mammoth grandstand, which is to be built on the cement racing stretch at the starting and finishing point. So large has it been that the cup commission has decided to lease the limited number of front row boxes only to persons who will take them both for the eliminating trials on October 10 and the race on October 24. A. R. Pardington has issued a warning against purchasing boxes and seats from any persons claiming to be erecting stands along the motor parkway, inasmuch as the cup commission has secured control of the land on both sides of the cement stretch to prevent spectators from locating outlaw

Vanderbilt Cup Promoters Are



stands. He says it will be impossible to get from such stands any extended view of the race or any details until long after it is over, since all telegraph and telephone wires will be under the control of the commission.

The cement portion of the new Vanderbilt course will be 28 feet wide crossing all intersecting railroads and highways overhead by cement viaducts, now in course of construction. These viaducts and bridges are the most expensive portions of the new motor highway. They must be fully 20 feet above the level of the intersecting dirt and railroads. The approaches must be tapered down so racing cars can take them at full speed. All of the turns on the cement highway are symmetrically rounded and banked, permitting a maintenance of the same speed which the cars attain on the level

stretches. After leaving the grand stand the racers will have a very fast run over the cement for 8 miles eastward to Bethpage, where the parkway joins what is known as the Round Swamp road, which runs north on slight grade to the beginning of the Plainview road. Following this road the car continues on north its intersection with a new extension of the Jericho turnpike. At this point the course bends directly west around what has been dubbed the "flatiron turn." The cars have a pretty speedy stretch nearly all down grade westward along the Jericho turnpike extension to Jericho, one of the turns on the 1906 Vanderbilt course. From there the new course is over the old Jericho road to its intersection with the old Westbury road, thence south across a very flat country to the Hempstead plains, thence to the beginning of the cement



BIRD'S-EYE VIEW OF COURSE ON LONG ISLAND THAT WILL

Busy Over Details of Contest



way and eastward over this to the grand stand, the start and finish.

Formal entry of a six-cylinder Acme has been made for the Vanderbilt cup race. It is nominated by the Acme Motor Car Co., of Reading, Pa., and will carry the colors of one of the Pennsylvania clubs affiliated with the American Automobile Association. This company made its debut in the road racing game at the Savannah meet last March. Its car, which was also of the six-cylinder type, finished third in the big race for the Savannah cup, despite the fact that its pilot was inexperienced in the racing game and drove his machine on a rather conservative time schedule. Who will be its pilot over the Long Island course has not yet been determined, though negotiations are in progress with several racing drivers of repute. The racer will have a six-cylinder motor

with 5-inch bore and 5-inch stroke. It is conservatively rated 60 horsepower at 1,000 revolutions per minute, but has been tested to upwards of 1,800 revolutions per minute. The cylinders are cast singly with valves on opposite sides. The wheelbase is 116 inches and the wheels, front and rear, are 36 by 4½ inches. The gasoline capacity will be about 40 gallons, and the tank will be directly back of the driver's seat. The car is so far advanced it is almost ready for testing.

Grand Prix Money Maker

Paris, July 31—As the result of the 2 days' racing at Dieppe on July 6 and 7 it is estimated that the Automobile Club of France has netted a clear profit of almost \$28,000, an amount slightly higher than last year's successful race. Engagement fees for the cars, voiturettes and tire firms having stations at the grandstand

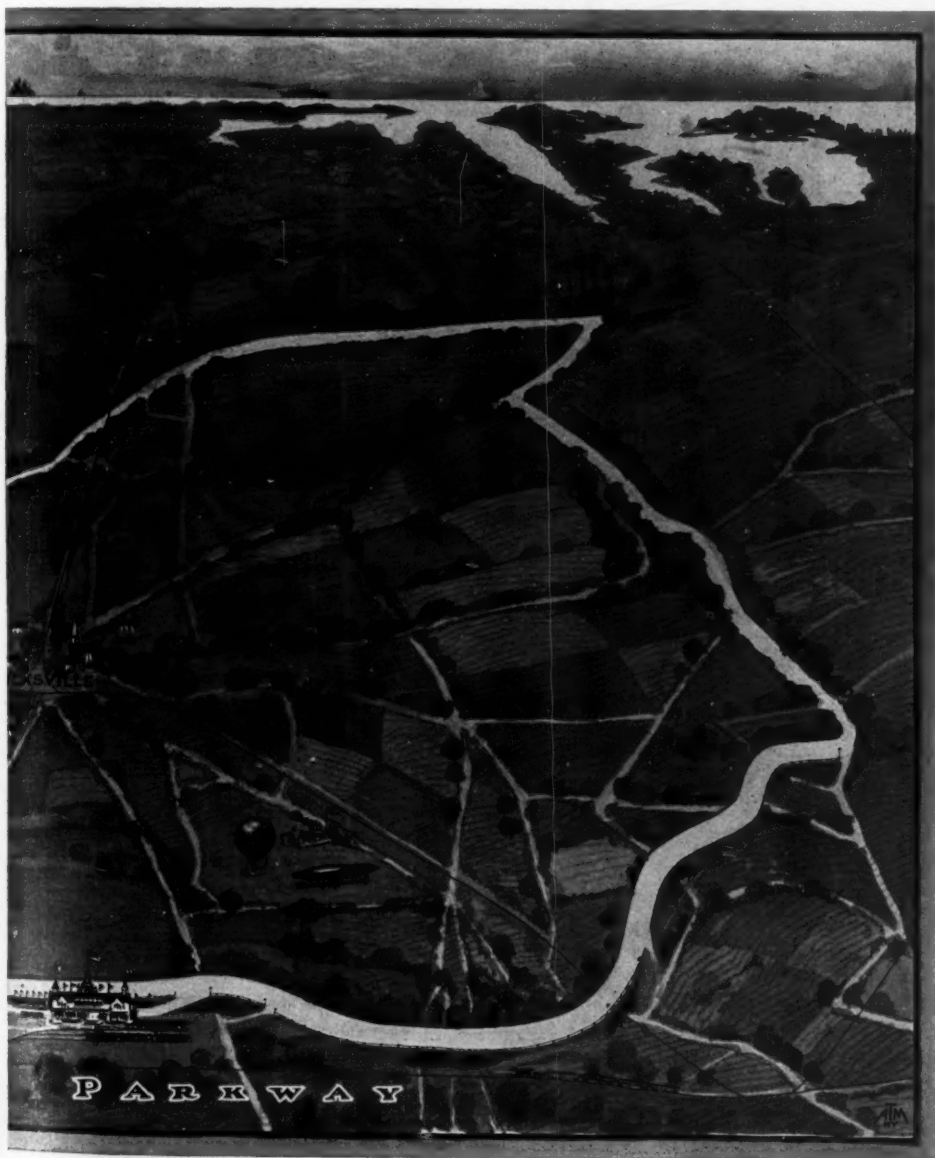
amounted to \$49,900; Dieppe gave a subvention of \$10,000; grandstand seats brought in \$22,000, and the sum of \$8,000 was obtained from such various sources as the sale of programs, buffet, cloak-rooms, etc. This gives a total of \$89,900 as receipts. The large grandstand at the starting line, barricades along the course and bridges in the various villages cost \$26,000; guarding the road by government troops and gendarmes was responsible for an expenditure of \$14,000; although the roads were made by the Dieppe authorities, the tarring had to be done by the club, the expenditure under this head being \$12,000; the clerical staff, together with railroad expenses and fees, cost \$10,000, making a total expenditure for the 2 days' races of \$62,000. No official figures regarding the profits of the races have been published by the club, but it is understood that the amounts given here are approximately correct.

Enter Foreign Races

Turin, July 27—Entries for the Florio and Bologna races are being received. French cars were the first to be entered for the Florio. They are three Mors, which probably will have for drivers the men that were at their wheels in the grand prix. Nos. 4, 5 and 6 have been secured by three Fiat cars which will be driven by Lancia, Nazzaro and Wagner. Three Italas are the only other cars for which the entry fee has been paid. One of the members of the sports committee says the entries of three Motobloc, three Bayard-Clements, three de Dietrichs and one or two Mercedes will be sent in. The Isotta-Fraschini and the Bianchi probably will not be on the Florio list, but in the other race. For the Bologna event the following cars have now been formally entered: Three Bianchi, to be driven by Tommaselli, Brambilla and Mayer; four Juniors, to be driven by Tocanier, Radice, Tamagni and Critti; two Francos, one Züst and a de Dietrich.

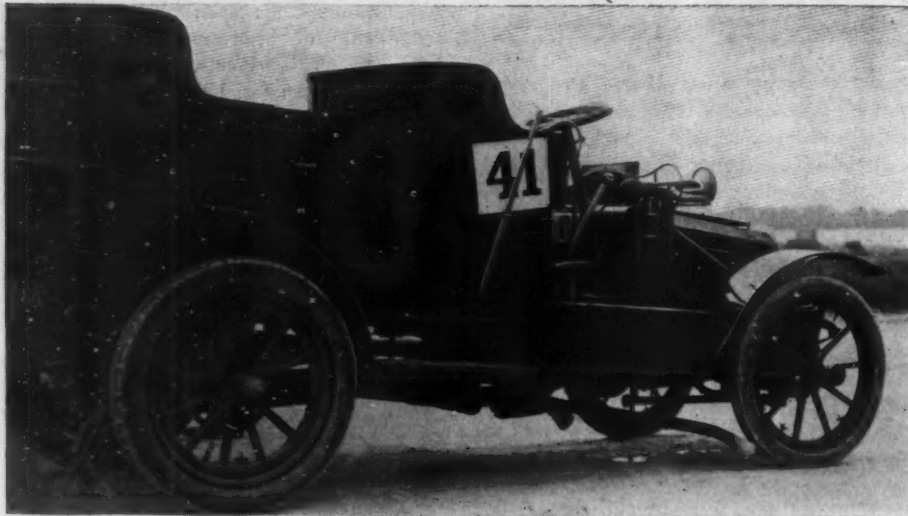
Plans Light Car Race

New York, Aug. 10.—The governors of the Automobile Club of America have approved of a scheme to run a 200-mile race at Savannah, Ga., for light cars in connection with the scheduled race on Thanksgiving day under European rules, and have handed the project over to the club's contest committee for execution. The idea is to run the light car race on the day before Thanksgiving day. Under the proposed limitations each car must have a minimum weight of 850 pounds and the equivalent of a maximum of 3¾ inches cylinder diameter for a four-cylinder motor or an equivalent in effective surface for motors of a different number of cylinders. This would give a range of 7.50 inches to 2.65 inches for four-cycle motors from one to eight cylinders; and 6.35 to 2.24 inches for two-cycle motors from one to eight cylinders. The club announces that the course will be completed by October 1.



BE USED FOR THE VANDERBILT CUP RACE NEXT OCTOBER

ENGLISH DUST TRIALS PROVE INTERESTING



EXHAUST SUCTION DEVICE FOR COLLECTING DUST

LONDON, July 28—The Royal Automobile Club has concluded its dust trials, and their results and the lessons that are to be learned from them are anxiously awaited. The trials consisted in careful experiments with numerous devices for the mitigation of the dust nuisance, and occupied 2 days at Brooklands, the first day being devoted to the adjudication of the least dust-raising manufacturers' stock car, for which event there were twenty-five entries. The second class was an amateur inter-club competition, three clubs competing, and on the second day those cars which had been specially fitted up with the idea of downing the dust demon were given a chance to demonstrate what progress they had made in their fight. Only tires ordinarily used were permitted in the second class. Solid tires and non-skid bands were barred in this class. Detachable tires were used in the third class so that it might be ascertained how the cars worked with different makes of pneumatics.

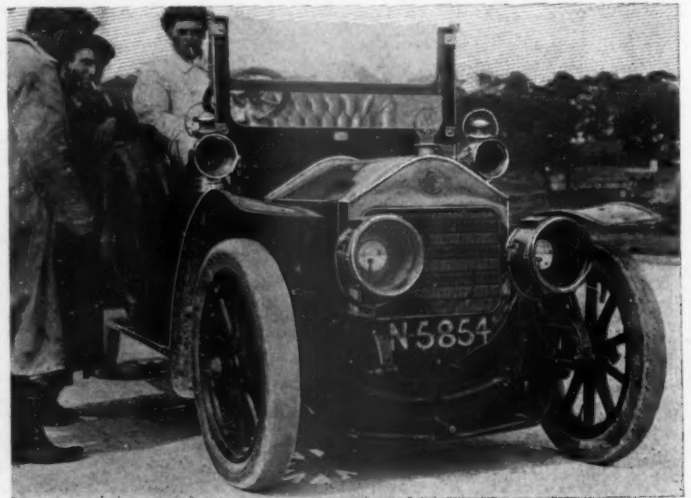
The judges now are wrestling with the statistics, and it will be some time before their deductions are announced. They

have before them numerous photographic and cinematographic records which were taken of each car as it traversed a piece of track specially prepared with fine limestone dust and dried leaves. This course had to be covered by each car at speeds of 20 and 30 miles an hour, these speeds being regulated by a device consisting of an endless tape to which white ribbons were attached at frequent intervals of space, passing over a couple of bicycle rims driven, as shown in the photograph, by an electric motor which derived its current from an electric car which stood on the track.

Deductions made at the conclusion of

the first day's test brought out stronger than ever what the critics all along have known—that cars built low to the ground and with gasoline tanks at the rear kicked more dust than those higher built. To the onlooker it was not easy to pick out any one car of this low-built type that made the passage with the least disturbance of the limestone; they all looked equally guilty; and it is apparent that the only solution of the dust problem so far as these cars are concerned is a dust preventative applied to the road.

In the way of comparison a horse-drawn vehicle was sent over this course at 12 miles an hour, and a bicycle was ridden through the dust at from 14 to 16 miles an hour. In neither case, though, was much dust noticeable. About the only disturbance was caused by the horse's hoofs. Also a Stanley steamer was sent over the course, and it raised less dust than even the horse or bicycle. By the way, the steamers were not permitted to



WAYMAN & MATTHEWS' ANTI-DUST DEVICE



WORKMEN SPREADING DUST FOR ENGLISH TEST

compete, it being held that the greatest problem was to devise means to stop or mitigate the nuisance so far as the gasoline cars were concerned. This shut out the White and Stanley, which made such remarkable demonstrations in last year's trials, although the Stanley took part as a non-contestant.

Nearly all the ocular results went to show that, with or without special devices, the dust raised at 30 miles an hour is practically double that raised at 20 miles an hour, while at 60 miles all the dust was sucked up by the passing car. So far as the wheels were concerned, it seemed as if the disk variety offended less than the wood or wire spoked ones. It was hard to differentiate, though, for the trials of each of these different wheels fitted to the same car were so far apart that comparisons could not be easily made. However, it struck most of the critics that the disk wheels made the least dis-

turbance, but every one will wait until they see the photographs before passing judgment.

Naturally the chief interest was centered in the third class, in which the cars fitted with special devices were allowed to compete. There were several ingenious devices shown, and while they may not be entirely successful, yet they prove that the makers of motor cars are doing their best to eliminate the dust nuisance as much as possible. Of the various devices the following are interesting, as showing the various ways in which inventors have set about solving the serious dust problem.

That of H. Treadwell was fitted to an old pattern 24-horsepower Orleans car fitted with three Dunlops and a Michelin. It consisted of a patent exhaust suction device. Pipes fitted with four rubber bell-mouthed pieces were carried close to the ground directly behind each wheel. By the action of the injector the dust was sucked through the pipes into a central box, from which it was deposited from time to time in small heaps upon the ground; in other words, the car literally carried away the dust, thus preventing it

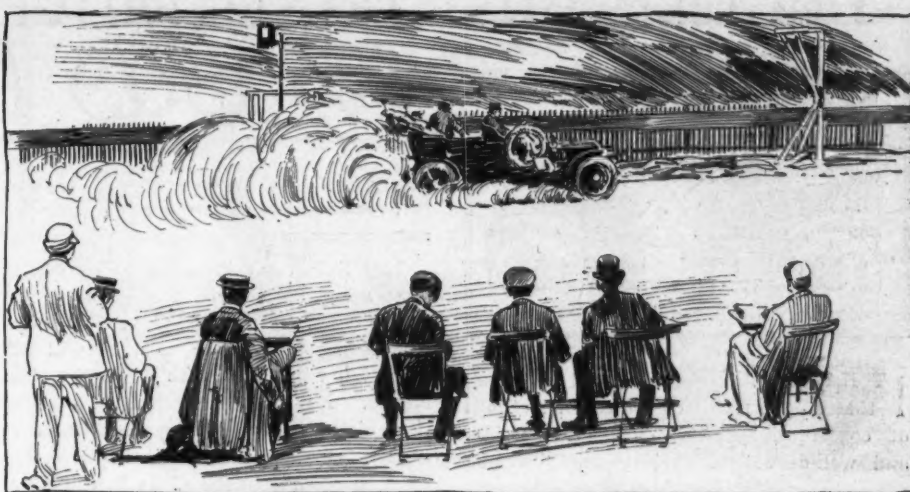


PILGRIM, WITH TRAY-LIKE UNDER WINGS

from blowing off to the side of the road, to the discomfiture of the inhabitants.

Another design was a complete undershield fitted to a Brooke car and invented by Conrad Ingleby. It was on a 21-horsepower car with Michelin and Dunlop tires and consisted of a complete undershield which was solid from the front axle up to half way under the engine, after which point it was perforated for the rest of its length. At the back of the car and just under the shield were two fans driven from the propeller shaft and designed to fill the partial vacuum which the passage of the car created. This was one of the most successful devices tried. At 20 miles an hour the dust raised was low and thin.

Better than this, or if not, certainly equal, was the performance of the standard 10-horsepower Cadillac with a patent folding seat. The American car had no other special devices upon it whatever, and its performance was a remarkable one



OFFICIALS WATCHING CAR GOING AT 30 MILES AN HOUR

in every way, the cloud it raised being very low and thin. A 20-horsepower Deauville, fitted with Drury-Medhurst tires, raised only a small amount of dust. These tires have an additional rim fitted in such a way that the tires only expand longitudinally and not laterally at all, thus having a constant and narrow tread.

A 40-horsepower Napier was fitted with various makes of tires and ran with them time after time over the course. Only the photographs will be able to show the difference in these performances. To the naked eye they were all alike. Another Napier car was driven at 60 miles an hour just to show how much dust could be made. It practically swept all the dust away.

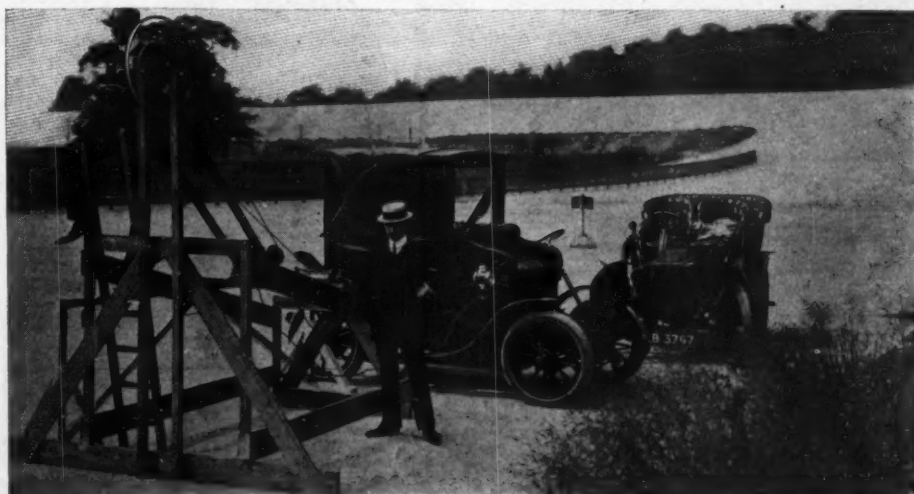
A Dennis car was used by the judges to demonstrate the bad effect of the low gasoline tank and tool boxes.

A 42-horsepower Daimler had mudguards on the front wheels, which instead of remaining stationary moved with them, as shown in the photograph. This seemed to result in an improvement.

Wayman & Matthews fitted a Junior car with a full-length undershield, disk wheels and with special shoes behind each wheel to deflect the dust down. This car made more dust than any other at both speeds—20 and 30 miles an hour.

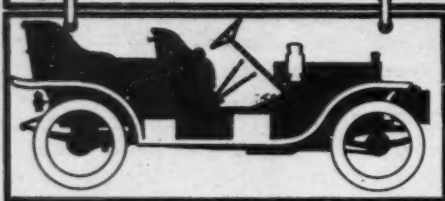
The 32-horsepower Pilgrim car illustrated was provided with a horizontal undertray and side pieces to catch the air deflected by the car's wings. The device did not raise less dust, but the cloud was noticeable by its height, proving, after all, that the designer was right in theory if nothing else.

It was interesting to watch a Pilgrim landaulet make the passage. Naturally one would look for it to raise more dust than the others, but to the surprise of all it caused less disturbance than many of the open-bodied cars, both at 20 and at 30 miles an hour. The critics ascribe this to the sheer clean under run of the under apron, although this shield comes very close to the ground. Taken altogether, everyone is well pleased with the results of the test which were held on Brooklands track.



APPARATUS USED FOR REGULATING SPEED OF CARS

Status of the 1909 Motor Car.



IT HAS been freely predicted all along that as the result of improved methods of construction, much cheaper materials and well-developed factory organizations working on a large scale, it would be possible to produce a good motor car to sell at a fraction of the prices which obtained a few years ago, and also be able to turn out a vehicle that would be superior in every respect to the cars of that time. In 1905, not to go any further back, that day seemed to lie in the indefinite future, but now, in view of the announcement of a number of makers who have already laid their plans bare for the coming year, it appears to be close at hand, if indeed, it is not already here.

To truly appreciate the situation as it will obtain for 1909, it will be necessary to go back a pace and review the history of the industry. In the early days inventors were struggling with the problem, just as inventors invariably do, in secret and in dread, fearing on the one hand the invention would not work, while on the other hand their secretiveness was enough to keep capital "in the next county." Those were the days of original ideas, freakish designs, doings in a small way, and a conglomeration of the good and the bad. Times change, and, with the times, things change. The next step in the chain of events was most conspicuous for the selection of the good points from the fifty-seven varieties.

If it is true that the cars of the eleventh year will be generally superior to the cars of the past, it is also true that the reasons should be no secret. A secret is an embryo idea, as a rule, while the cars of the eleventh year are cars; in fact, they can be seen on the road, and there are thousands of them being constructed at the present time.

Low Prices Rule

That the purchase price of these cars will be low, quite as low as the author has had the temerity to intimate, it can be adequately substantiated by merely citing a few instances in crystalline form of some of the 1909 models:

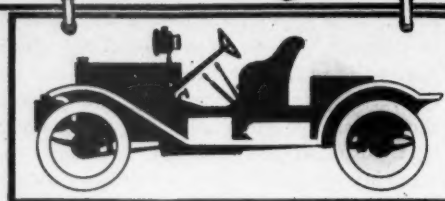
	Horsepower	
Chalmers-Detroit	30	\$1,500
E-M-F	30	1,200
Selden	30	2,000
Overland	30	1,500
Kisselkar	30	1,500
Cadillac	30	1,400
Rambler	30	1,900
Mitchell	35	2,000
Jackson	35	2,000

EDITOR'S NOTE—Paper prepared by Thomas J. Fay, President Society of Automobile Engineers.

This list is not intended to convey the impression that there are no other cars in the class. As the author is able to pay attention to the other cars, he will take them up, with a view to displaying their merits. Nor is it intended to overlook the existence of the larger and more expensive cars, or that great improvements have been made in them. It is well known that they represent far greater value for the price than ever before. The gist of the present discussion takes into account the cars at the lower prices only.

New Car Characteristics

First and foremost, the new cars are conspicuous for the entire absence of elaborate body work. We can no longer expect to see a \$1,200 body on a car costing no more. But the new body work is neat and strong, and its comfort is by way of a fact rather than as a theory. In body work the idea of aluminum in fancy shapes and in fantastic configuration, backed up by a thick lining of plaster Paris, that the whole may be stronger, will no longer obtain. Plain, straight work affords strength, with grace and lightness besides. It is not that aluminum may not find a place in the simplified bodies of the cars in question, for aluminum there will be when this product will best serve the ends to be sought. Body work in the simple form it has assumed, in this same age of the motor car, is free from the contortions to which aluminum so adequately lent itself. The idea that



the aluminum bodies were lighter than those made otherwise has long since been exploded. The cost of the body and the cost of keeping it in presentable form will be but a small part of what it has been. In the past the body was the important part, important because it was the only part, perhaps, that many of the patrons could pass judgment upon, and it is no stretch of the imagination to observe that the "seventeen rubs of varnish" had a lot to do with the acceptability of the whole. Time tells the tale, and time, in this case, tells the user that what he needs is good machinery, plain body work, and, above all, a power plant that will survive strenuous service. What has experience taught?

Unit Power Plant Coming

Once designers are convinced of the genuineness of the conclusion that self-contained power plants constitute all to be desired, it does not take them long to put their conclusions into practice. Users of cars can choose for themselves as to the details more nearly according with their ideals, but the same users probably will decide that the chassis frame of a motor car is too unstable as a platform on which to erect the machinery in subdivided units, if there must be any interrelation. There are two plans in advance-

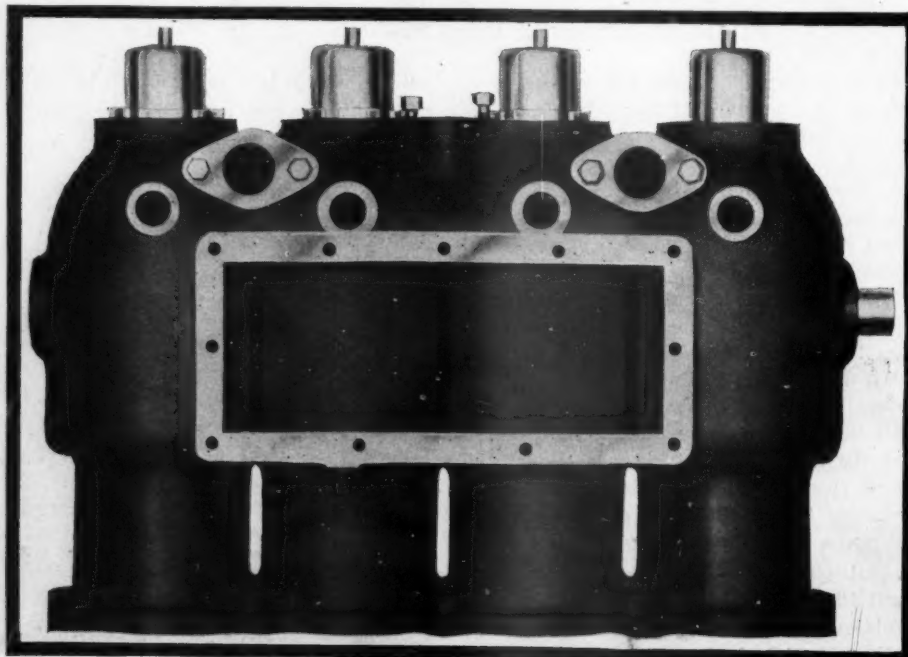


FIG. 1—CYLINDERS CAST IN ONE CASTING

ing the idea of doing away with the chassis frame as the connecting member between related parts of a unit, or as between units that must work in unison. If alignment is essential to the good of the whole, that alignment cannot be fairly expected if the chassis frame is to be responsible for it.

In the earlier work it was the chassis frame that was depended upon to insure alignment between the motor and the transmission. When it was found that reliance could not be placed upon the frame, designers sought other means, such as the self-contained power plant and the transmission axle. Both of these methods give assurance of the fact that the chassis frame will not render the machinery *hors du combat* should a sag follow a little hard usage. A sag in the chassis frame is a natural sequence of the use of the car in almost every instance, because until the sag does take place the metal is not in a state of tension. If this condition of tension were not to be anticipated, there would be no need of a frame; at all events, so much frame as is our wont to provide for a motor car.

No matter how great the section of a beam or a member of any sort, if it is loaded, however small the load, the result is a deflection. In the modern self-contained scheme of construction, there are no related parts that can suffer as a result of deflections because there are no members intervening that are A of any notable length; B that would have to be used of such light section as a chassis frame; C that are subjected to the strains incident to road conditions.

As before stated, no matter what the section or the material, or no matter how small the load, a deflection will obtain. If this is so, how necessary it is then to be sure of a definite limit to the causes of the deflection and that the length of the member be, say 10 inches instead of 100 inches? Obviously the self-contained construction is the form that renders it possible to avoid the greater part of the two deflections. If it is possible to get on at all with the greater tendency, and it seems to be—what a gap lies between trouble and the man who puts his money in a self-contained plant from this point of view. There are so many ways of courting trouble that it is not necessary to find it by way of considerable deflections in a long beam. The repairman cannot fix a chassis frame that sags. He may charge for attempting to accomplish the task, but it is the same frame in the same car with the same fundamental difficulty ever present, awaiting the moment when it will assert itself.

Economical Modern Construction

Fortunately, the modern construction is less expensive to evolve than the way we were taught by the "foreign contingent," whom we must hold responsible for the "distributed components of cars." Even

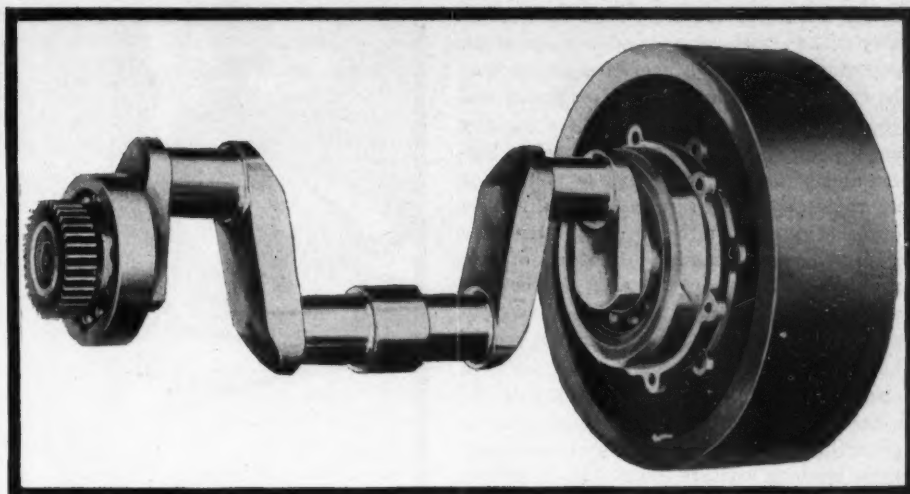


FIG. 2—THE TWO-BEARING CRANKSHAFT

in the matter of repair parts, the policy is one sure to advance the industry as a whole by leaps and by bounds. Ford, for instance, will sell all the parts that go to make a car at the price of the complete car. Who can find in this any sign of the old adage that "In repair work we have legitimate prey." That the Ford is not an isolated case is evident by looking over the field.

Some Cardinal Features

Fig. 1 shows the four cylinders *en bloc*, as put out by the Chalmers-Detroit company. The set argument against this method of cylinder construction is that the four cylinders *en bloc* are very costly and if something happens to one of them, four must be purchased to make the replacement. But in this case the four cylinders will be replaced for the sum of \$35—less than half the cost of a single cylinder in a well known foreign car. Who would refuse to have all the cylinders of his motor replaced at this price.

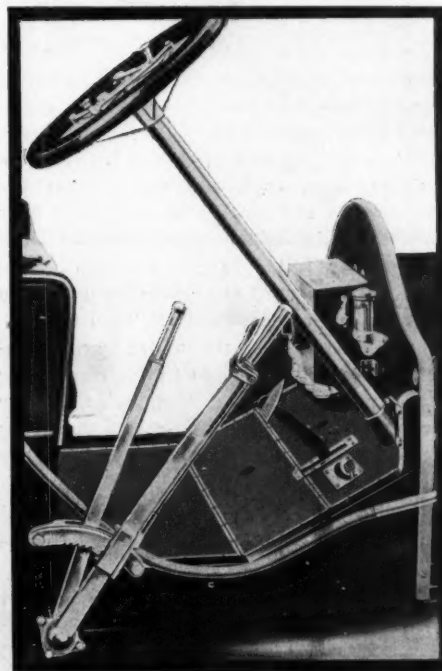


FIG. 3—PLENTY OF ROOM

Of the details of construction of the cars of the eleventh year space will not admit of the mention of more than a few. It is understood that no mention will be made of old and well-known methods, except in the light of new applications.

Two-Bearing Crankshaft

Fig. 2 illustrates a crankshaft with only two bearings, the motor being of the four-cylinder type. Usually such motors have at least three bearings and many of them have five. At the first jump out of the box many will say, "It is wrong." Obviously, we could not get on with one bearing, but fortunately it is not necessary to try, or could we do with two, unless the length of the crankshaft is short enough to bring its deflections within the limit experience shows will be safe. As said before, the deflection—considering the crankshaft as an abstract beam—is in proportion to the cube of the length. Let us see what this means in a comparison of two motors, the one of today and the other of but a short while ago.

In the modern motor with two bearings the distance between them will be, say 23 inches. Let us assume also that the strain will be proportional to the square of the diameter of the cylinders, and that in the modern motor the bore of the cylinders—for the same power—will be 64 per cent of the bore of the cylinders of 2 or 3 years ago. Let us say that in the earlier motors, the distances between bearings was 20 inches. Now, let us make a rough comparison, thus:

In the three-bearing motors: The strains = 1,002 = 10,000.
 In the two-bearing motors: The strains = 10,000 x .64 = 6,400.
 In the three-bearing motors: The cube of the length = 8,000.
 In the two-bearing motors: The cube of the length = 12,167.
 In the three-bearing motors: Factor of deflection = 80,000,000.
 In the two-bearing motors: Factor of deflection = 77,828,800.

In other words, the two-bearing crankshafts of today are not required to work as hard as were the three-bearing motor crankshafts of yesterday. But that is not the whole story; the three-bearing crankshafts did work, notwithstanding the in-

ferior nature of the steel then in common use. The steel of today is very much superior to that of a short time ago; that is, the steel that a motor car engineer will contemplate using in a product of any consequence at all. Thus the steel is better and the strain is less. The method of approximating the results is simplified in order that the non-technical will be more likely to understand the nature of the problem and the accuracy of the conclusions. The idea is not to convey the impression that only two bearings should be used in every case, or that it is a crime to use three. What we wish to show is that hasty conclusions are out of place in a matter of this sort and that time renders matters clear. It is proper to add, however, that it is a decided advantage to have a short motor, because then something beside the motor can find space in a car of a length capable of maneuvering on an ordinary roadway.

Low-Priced Car Status

The main point to be made is this: Are the cars at the low prices to be inferior to the cars of the past costing double or even treble the price of the new product? How shall this question be answered? Refer to Fig. 3 and observe if the space is cramped, if the scheme is not clean cut, and compare this with other products of the past to determine if there has been any retrogression. Fig. 4 shows the details of the steering gear and its related parts; note the depth of the front end of the side frame; see the wealth of bearing surface provided for the steering members; observe that the means for oiling are adequate. Fig. 5 shows a car upside down. What product in the past exhibited a cleaner bottom? Wherein lies the retrogression? The author fails to note even a tendency; indeed, may we not say this tendency is in the direction of improvement?

It may be said the new cars are smaller, but with the present short motors and a wheelbase of say 110 inches, it is a question if the new product will not afford more available space. It was not by curtailing then that the new product was rendered low priced. Suspicion is prone to run rampant, and it follows that all courses of cost reduction must be explored ere the situation can be accepted without a struggle. Did they reduce the sizes of the wheels? In many instances the sizes were actually increased over the practice of the past, and in no cases are the tires below the sizes recommended by the tire-makers.

The man who has to pay for the tires, however, never would have arrived at the right conclusion, since the man who sees through a dollar is as blind as a bat. It is the man who gets his line of vision on another man's dollar that can tell how big the tires ought to be, and even he may fall short of nerve equal to the occasion. At all events, the low cost of

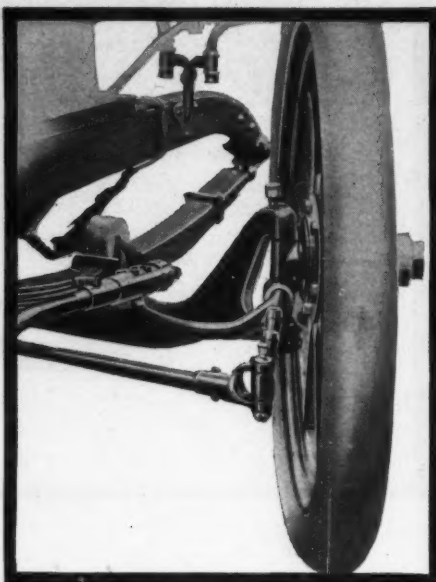


FIG. 4—THE STEERING GEAR

the product to be placed before the 1909 public was not rendered low by stinting the tires, which is more than can be said for some of the cars of the past. If the cars are big and roomy, if the work bears all the earmarks of a high standard, if there has been no retrogression in the matter of style and finish, since the price is so low, there are those who will say, "The materials must be very bad indeed."

Materials of Quality

Actually the materials will be better, far better than they ever were before, no matter what the price of the car, and for the same reason that the price of the car can be lowered. The most inferior materials of today, entering into car work, are superior to the best to be had but a few short years ago. What we have today are not high-priced special products to be used sparingly in a few spots to give the press agent a chance at his stock phrases. We have today a good average product, the worst of which is not so bad as not to be of value and the best of which is not so high-priced as to require a nerve tonic with every pound purchased. In the earlier days, engineers relied upon the vendors of the steel, and sometimes they were safe in doing so, but the occasions when they failed to get the right material were frequent enough to keep them in hot water more constantly. Then the purchasing agents of the motor car companies were not skilled in the matter of the quality of steel, and to them price was the whole story. Bessemer steel was ever low in price, and Bessemer was what they "landed" every time.

Today the situation is quite different in that the makers of cars pay quite as

much attention to the quality of the material as the occasion requires, but they pay more attention to the question of where to put the several grades of available product. The proper way to put it then, is to say "appropriate materials" are the order of the day.

Modus Operandi of Building

Referring to materials, it is not at present the idea to start with highly resistant materials—normally highly resistant—for such products are over costly; moreover, they resist machining with a tenacity that is scarcely equalled by their after performance. The current idea, which is the idea that will survive for 1909, takes into account the fact that certain materials are capable of being rendered hard or soft, dynamic or ductile, or both, and initially the same materials are soft enough to machine. These materials when fashioned into the desired shape, leaving a few thousandths to permit grinding, are then ready for the heat treating process through which they are rendered fit. In the normal state, the steel may not show such good qualities as one would want, while in the finished state the parts will exhibit just the characteristics most desirable in view of the duties of the parts.

Take crankshafts, for illustration: They are costly when they are "slabbed," and it is true the slabbing process cuts the lay of the fiber, leaving less than would be desirable in the finished product. To get away from the cost and the defect, the shafts are die-forged of relatively soft material, by a process such as will not bruise the steel, or otherwise leave it in such shape that the after heat-treatment will be futile. The die-forging thus made are easy to fashion into shape ready for the grinder, which device takes off the final thousandths. Before grinding, the shafts are heat-treated, to render them rigid and dynamic. These are the qualities demanded in a crankshaft.

Now, there is no known material of a greater modulus of elasticity than the material used in this work. It follows that there is no material that will permit of the use of less, since the torsional angle will be minimum in the shafts as made. If the torsional angle is thus a minimum it is fair to infer that the deflections on the whole will be as low as possible. If this is so, the need of dynamic ability will be the minimum in the shafts as made, yet it is the purpose of the heat treating process to accentuate this one property to the greatest possible extent. Crankshafts thus made cost probably one-third of the cost of the crankshafts of the more resistant alloy steel, and so it may be said the cost of the re-



placement will be very low in comparison. Even so, it does not of necessity follow that the breakages will be more for the initially soft material, because as before stated, the modulus of elasticity is the maximum possible of attainment in the materials used. It is desirable to be able to replace a crankshaft at small cost, and it cannot be said that the present plan is merely cheap at the expense of merit. The eleventh-year cars are pretty much the same in this regard, and the author is, as a result, saved the annoyance of making exceptions. What is true of crankshafts is equally true of the other parts, except that the heat treatment is not the same for all.

Die Forgings, Not Castings

It is desirable to note the absence of castings in the parts that can well be of die-forgings, showing that the cost of dies is a matter of no moment, now that cars are turned out in large quantities. When cars were built in small numbers, the die problem was uppermost, and resort was had to castings to sidestep the cost. Most of the cars are provided with transmissions with three speeds and reverse, using the sliding gear principle, which, in spite of its mechanical incongruity, seems to be the best all around method. The gears are of ample proportions, and the materials are alloy steel, as a rule.

In the cars in question, it is agreeable to note that the wheels are better than they ever were before, with better proportions of the spokes, and hubs that are more dependable. The question of bearings is one that has settled down to well and favorably known types of ball and roller-bearings with never a thought of going back to the earlier types of plain bearings. Of the ball-bearings, the annular has the call, whereas, the roller-bearings are largely of the Timken and Hyatt types.

Magnetos Are Recognized

In the cars for 1909, the magneto is looked upon as finality as the device for the ignition. There are, of course, several makes of magnetos, each of which has its adherents. Magnetos are not provided in every case, except as an extra. Purchasers can best settle for themselves, if they will buy the cars with magneto at the regular price, or if they will select the other cars and pay extra for the magneto. The author thinks they should adopt the magneto even as an extra.

The clutch question in the new cars is more secure than it ever was before, and while all are not multiple-disk types, all are far more reliable than they were. All illustrate clutch simplicity, and there are few of us who well fail to remember the complex schemes of the past. It is a source of much delight to observe that the new crop of clutches is primarily strong, yet, withal, simple in extreme. The common clutch is of the

multiple-disk genus, of bronze and steel alternately, with the discs of considerable number, and enough of them to do the work without showing wear. In this case, instead of the clutch being housed in, the whole flywheel with the clutch is in an oil-tight housing and the oil is distributed to the clutch by the flywheel.

Brakes, fortunately, are well thought out in all the cars of the future, but special mention is due to those of the builders who avoid the use of facings that will not stand the heat and wear. The "thermeid" idea is taking hold of such builders as will pay the price, and in view of the heat resisting ability of such materials in view of their high co-efficient of friction, the brakes should cease to be a source of annoyance, as they were so prone to be in the past. This is a point which should indicate that the new cars are not of low quality as a sequence of low price.

In conclusion, it may be said that the whole undercurrent of this article is to convey the impression that the cars of the eleventh year generally are the best cars that the builders ever turned out, and are turning out in large quantities, in order that the price will be very much lower than it ever was before. Later on the idea will be to discuss in detail the parts of the several cars, with the idea of showing in what manner they are entitled to the confidence of the patrons of the industry.

Low - Tension Short-Circuits

Some of the old forms of make-and-break igniters depend on mica washers for insulating the stationary electrode. These washers may be found at both the inner and outer ends, or at the inner end only. If they are at the inner end they are very easily rendered ineffective by deposits of carbon. It is of no particular avail to clean them with gasoline, if the oil soaks in between the mica leaves, since on subsequently burning out it leaves the carbon behind it, where, of course, it is perfectly inaccessible. For this reason the use of mica for internal insulation has been prac-

tically abandoned; but there are many cars still running which have igniters arranged in this way. Even when lava bushings are used, cleaning is occasionally necessary, although in this case it is much more effectual, and a little gasoline and sand-paper will keep a lava bushing in service for a long time. When the engine fails to ignite, particularly if all cylinders fail owing to a recent heavy dose of oil, and if the circumstances are otherwise such as to make it uncertain whether the igniters or carburetor is at fault it may be desirable to test the insulation of the igniters without removing them. If the igniters have mica washers, an electrical test may be the only way to settle definitely whether or not the insulation is good. A very easy way to make this test is to use a battery of any convenient strength—a single cell will suffice—with a pocket voltmeter whose scale is proportioned to the battery used. All the electrodes are disconnected from the bus bar, and note is taken which, if any, of the igniters is making contact from the action of its cam. The others are then tested by putting the voltmeter in series with the battery, and connecting the free terminals of the voltmeter and the battery to the insulated electrode and the engine frame respectively. If the insulation is perfect the voltmeter will give zero reading. If the electrode is completely short-circuited, the voltmeter reading will be the voltage of the battery. If there is a partial short circuit due to carbon, the voltmeter reading will bear the same proportion to the full voltage of the battery that the resistance of the voltmeter coil bears to the resistance of the carbon short-circuit, being low when the carbon resistance is high and increasing as the carbon affords a freer path for the leakage of current. If any of the igniters is making contact, the crank must be given a turn before testing it. If suspicion is directed to the magneto itself or the switch or wiring, one can tell whether or not a spark is produced at any igniter by touching the insulated electrode and the engine at the same time while the crank is turned. This test, however, will not betray carbon leakage.

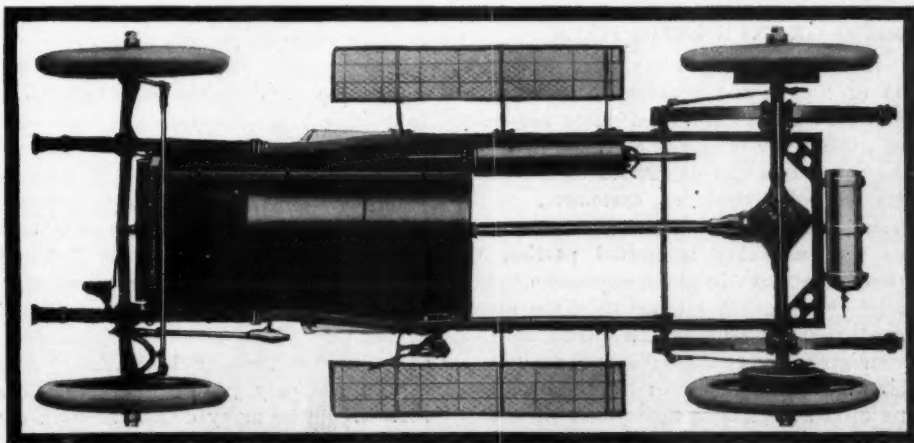


FIG. 5—A CLEAN-CUT UNDERPAN APPEARANCE



The Readers' Clearing House



REGULATING GASOLINE FLOW

Decatur, Mich.—Editor Motor Age—Will Motor Age tell what is the generally accepted theory in feeding gasoline to carbureters? When is it most needed, on hot, cold, dry or damp days?—A. E. Lawrence.

In feeding gasoline to carbureters the amount consumed depends, to quite an extent on weather conditions. On cold days it is much harder to vaporize gasoline than on warm days, with the result that generally more is fed, a certain percentage of which is always wasted. On exceptionally hot days gasoline vaporizes with great readiness and the needle valves should be closed a little at such time. The majority of makers rarely take this precaution, and an over-rich mixture is often the result. The most economical day for a carbureter is a moist, warm day, at which time there is a high percentage of oxygen and ozone present in the atmosphere, both of which are excellent supporters of combustion and ideal for a gasoline motor. With damp gases it is possible to get a better charge into the cylinders than when the gas is hot and dry. On dry days the carburation problem is at its easiest. In operating a car, where the adjustments for the needle valve are not carried through to the dash, it is somewhat difficult to change the gasoline flow according to climatic conditions. The difficulty of this is added to because of the poorly graduated scales at the adjustment of the needle valve, whereby the driver can by previous experiments determine just what fraction of a turn to give the needle valve for different days. This further suggests the improper locking of needle valves, frequently found on cars which results in the valve shaking loose and opening and closing at unexpected moments. In taking into consideration the amount of gasoline fed, recognition must be taken of the specific gravity of the gasoline.

SOLID OR PNEUMATIC TIRES

Akron, O.—Editor Motor Age—On page 18 of the August 6 issue of Motor Age appeared a communication under the head of "Solid or Pneumatic Tires," which we think does not do justice to the makers of solid tires, or customers, as it would lead O. E. Potter, the communicant, as well as other interested parties, to think that the original expense of the solid tire is much greater than the pneumatic tire of its size. We wish to call your attention to the following paragraph of that communication: "Twenty-eight by 3-inch solid tires list at \$34 with discounts, and a clincher casing of the same size at from \$23 to \$25. A solid tire

EDITOR'S NOTE—In this department Motor Age answers free of charge questions regarding motor problems and invites a discussion of pertinent subjects. Correspondence is solicited from subscribers and others.

36 by 4 inches lists at \$67.70 with discounts, and a 36 by 4½-inch pneumatic casing at from \$59 to \$63." We wish to state that it requires inner tubes as well as casings when using pneumatic tires, and that the communicant cannot run cases without any tubes. The original cost of a solid tire, made for clincher rims, compares favorably with the first cost of a complete pneumatic tire of any reliable make, taking for example the Goodrich, Hartford, Michelin and others. The average life of a set of Motz non-skid cushion tires is at least four or five times as great without annoyances, such as punctures, blow-outs and retreading expenses. On good roads we can maintain the same speed with such a tire, as with a properly inflated pneumatic. On extremely rough roads, such as cobble-stone pavement, you are compelled to travel somewhat slower than with a partly inflated pneumatic tire.—Motz Tire and Rubber Co.

IDEAS ON WESTERN CAR

Trinidad, Colo.—Editor Motor Age—I note Motor Age is asking for suggestions from its readers and is getting them along conventional lines. Out west we have generally very poor roads, frequently deeply rutted and at the same time difficult to straddle. High wheels, at least 36 inches, and straight axles with side chain drive are advisable. One maker claims that in such a combination with bevel gear drive to jackshaft, there is a loss of 36 per cent. Why would it not do to drive, from a two-cylinder opposed engine placed longitudinally under body, to the jackshaft by a heavy enclosed chain, then again by chains to the rear axle? The advantage would be: A—Little loss of efficiency. B—Easy repair of chains—important a long way from a shop. C—The racking of frame on bad roads would not affect the chain transmission as it would a gear one, though the jackshaft should be flexibly hung. D—Less cost and weight. Would it not also be possible to put two sprockets on the engine shaft of the same size and from them chains to different size sprockets on the jackshaft, these sprockets to run loose on the jackshaft until seized by a clutch working right and left to engage either one of them?

This plan would give two direct drives and two more through the planetary gear-set. I am only giving the rough idea, there would be many details to work out, but it seems that a very serviceable and cheap car might be built on this basis

with advantage, as noted. The ordinary car with clearance of 6 to 10 inches is all right for good roads but very awkward to handle on some of the mountain roads. Another point to attend to is the gear ratio. That is seldom given in the description of a car, or is the weight. My car weighs all of 1,640 pounds and has two 5 by 5-inch cylinders rated at 16-horsepower, and geared 3.2 to 1. That gearing is entirely too high for this country. It should not be higher than 4 to 1, or 4.5 to 1 with 36-inch wheels. Get as small an engine as possible and let it run at a high speed with a low gearing, say 6 to 1 with 36-inch wheels. True, the engine would wear out quicker, but if lubricated well it would then outlast the car if properly made. In this way the weight could be kept down, while the engine would always be running at its best efficiency. If I am wrong in any of these notions, please criticize them and invite your contributors to do likewise. To recapitulate, my idea for a cheap car for rough work would be: Two 5 by 5-inch cylinders opposed under body, body to tilt, driving by chain to jackshaft, thence by side chains to the rear axle; ratio of gearing with this size engine 5 to 1 on direct drive with 36-inch wheels; planetary gearing, though selective, would be preferred if practicable and possible economically; weight not to exceed 1,600 pounds; ignition by magneto—some of these can be bought cheaply—and storage battery. I don't believe in dry cells unless the car is in constant use, as they deteriorate whether in use or not, though they keep better if put up in tight tin cases. The body should be of a light runabout style to seat four, with rear seat removable.—A. B. C.

EQUIPPING A CITY GARAGE

Charlotte, Mich.—Editor Motor Age—I am anxious to obtain some information in regard to the proper method of equipping an ideal garage. It is designed for a city of 35,000 population and the building will be about 60 by 120 feet—C. Roy Hathaway.

A Chicago authority estimates that such a garage could be started at a cost around \$2,000, figuring that the garage man had his building ready for the installation of the plant. The prospective owner of such a plant should figure on an oil and gasoline system, a machine shop, the handling of supplies, etc. In a garage of this character there should be at least two oil tanks which should cost about \$150 to install. There should be a gasoline tank holding about 320 gallons which, piped, would cost about \$100. The machine shop should contain a lathe,

grinder, drill press and buffer, and the estimated cost of installing these runs between \$500 and \$600. A garage man should not attempt tire repairs, because often such plants run on so small a scale do not pay. It is best to send vulcanizing jobs outside, even if they have to go to some other city. A stock of supplies should be carried, but it is not necessary to invest more than \$300 or \$400 in this, for the garage man does not have to handle a very big stock of tires, which represent the chief outlay. The garage should of course have a washing rack as well as repair pits, but in neither case does this represent a very big investment—not more than \$10 or \$15 at the outside.

THEY CLEAN RADIATORS

New York, N. Y.—Editor Motor Age—Sometime ago I put some brown powder in my radiator to clean out the water-jackets, resulting instead in clogging them up and causing poor circulation. The inside of the radiator looks as though it had brown mud clinging to it. Can Motor Age tell me of anything to clean the water system. I have found that gasoline will clean the radiator.—J. H. Graham.

There are a dozen or more radiator cleaning compounds on the market, only one of which Motor Age has had any experience with. This preparation, Fluff-Foe, put up in cans, is poured into the radiator and after the motor has run a few hours the water is drained off. In several cases vast amounts of impurities, such as rust and scales, have been removed. It is manufactured by John Callahan & Co., Chamber of Commerce building, Chicago, Ill. Other manufacturers of radiator cleaning compounds are: Auto-Radium Co., Cleveland, Ohio; Badger Mfg. & Supply Co., Milwaukee, Wis.; Cabrera Chemical Co., New York, and Nautalae Co., Boston, Mass.

ILLINOIS LICENSE LAW

Cooksville, Ill.—Editor Motor Age—I would like a little information about the Illinois motor laws, wishing in particular to know the regulations regarding numbers on lamps.—L. L. Hanson.

The regulation governing the carrying of numbers on motor vehicles in the state of Illinois is as follows: "The owner of each motor vehicle shall have a number conspicuously displayed upon the front and back of every motor vehicle owned by him, whenever the same shall be driven or used upon the public street, roads, turnpikes, parks, parkways, drives or other public highways in the state. These numbers must be separate, arabic numerals, not less than 4 inches in height, and each stroke to be not less than $\frac{1}{2}$ inch wide. As a part of this number, must be the letters 'Ill.'—the abbreviation for Illinois. The numbers and letters must be black on a white ground. Every motor vehicle shall carry two lamps, upon the

glass fronts of which shall be displayed, in such manner as to be plainly visible when the lamps are lighted, the license number corresponding to that on the regular license tag."

MOTOR CAR PROBLEMS

Warren, Mass.—Editor Motor Age—Will Motor Age give me some information through its Readers' Clearing House columns on the following subjects: A. The advantages and disadvantages of a three-cylinder, four-cycle gas engine. B. If in a two-cycle engine there is just as much compression in pounds in the crankcase as in the cylinder at the joint time of compression. C. Take a racing machine, about how many revolutions per minute does the engine go when the car is traveling at 60 miles per hour? D. The duties of a mechanic on a racing machine.—Lowell S. Ellis.

A. The three-cylinder motor of the four-cycle type is much more difficult to balance so far as its power impulses are concerned, than the four-cylinder motor of the same type, which accounts for its rare use on the motor car. That is, whether the crankpins are placed 120 degrees apart round the circle, or two of them are in the same plane with third at 180 degrees, the order of firing is irregular, and though well-balanced mechanically, in the case of the 120-degree arrangement, its impulse balance is poor in either case. Although largely employed for stationary work, as well as to some extent in marine practice, we could never see that the three-cylinder motor had any particular advantages on the motor car. However, there are authorities who are of the contrary opinion, and if they wish to do so, they may come forward in these columns in support of their side of the question.

B. This question is rather ambiguous, but we presume you mean by "at the joint time of compression," the moment that the charge is transferred from the crankcase to the combustion chamber, because when the piston is compressing; a fresh charge is being drawn into the crankcase. If this be correct, it is evident that the answer to your question must be "No." With the same degree of compression on either side of the transfer port, that is, in the combustion chamber and in the crankcase, there could be no movement of the charge. As it is, the fresh charge is under a compression of anywhere from 3 to 8 pounds, according to the design of the motor, while in the combustion chamber it is very slightly above atmospheric, thus permitting the inflow of the supply

of fuel from the crankcase. The amount of pressure in the latter, the size of the ports and the like, are all calculated to permit of as quick a transfer as possible, as it must be borne in mind that the port is only open for a very small fraction of a second.

C. This naturally depends upon whether it is equipped with a high or a low-speed motor and what its gear ratio happens to be, so that it would be impossible to even approximately answer the question for this particular speed without knowing something more about the car. In general, however, it might be placed at anywhere from 1,200 to 1,500 revolutions per minute, but as many of the cars in important road races average speed as high or better than this for the whole distance, and go as far as 90 to 95 miles on straight stretches, it is evident that their motors are capable of running much faster.

D. While running, the chief duties of the mechanic are to watch the oil, and a special hand pump by means of which extra oil can be injected directly into the crankcase is usually provided. He also watches any other adjustments that can be made while under way, and when stopped for repairs or tires, assists the driver in making these, the rules under which most recent contests have been run providing that only the driver and his mechanic can attend to such things and that outside assistance will be sufficient to disqualify the car.

WANTS MAKERS' NAMES

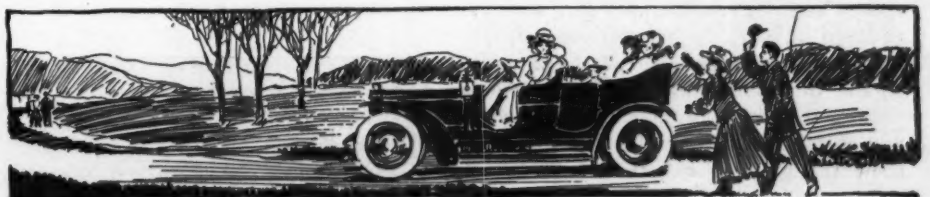
Logansport, Ind.—Editor Motor Age—Please give me addresses of following makers, if possible: Standard transmission gear, Stinemetz boiler, Aultman steamer, and Keim Ball Bearing Engine Co.—F. D. Bowyer.

Motor Age would like information from its readers on the names and addresses of the makers of these parts.

INFORMATION ON INERTIA

Camden, S. C.—Editor Motor Age—Define inertia. Recently a number of motor cranks, including myself, got into a heated discussion on the absolute meaning of the word. I defined it as "the resistance that a body offers against a change in its position." Any fuller definition in the columns of the Readers' Clearing House will be appreciated.—R. G. McCreight.

Inertia is that property of a body by which it tends to continue in the state of rest or motion in which it may be placed, until acted upon by some force. As used by the nontechnical, it is almost univer-



sally employed in the former sense, that is, that of the resistance which a body offers against a change in its position, an inert body usually being intended, so that your definition is perfectly correct so far as it goes. The popular impression is that only inert bodies have inertia, it being likewise generally thought that a moving body is possessed of momentum alone, whereas an object at rest is possessed of inertia, and the same object in movement has both momentum and inertia.

LONG-STROKE EFFICIENCY

Allentown, Pa.—Editor Motor Age—I have been greatly interested in following the various transitions through which French racing rules have gone in the past few years, and would like to have a query concerning them answered through the column of the Readers' Clearing House. I understand that the unlimited bore plan of last year—in other words, the fuel consumption restriction, was done away with, principally because it placed no restriction whatever upon the speed of the car. But from the accounts of this year's grand prix race, which appeared in Motor Age at the time, I learn that the speeds averaged by the different competitors, under this year's limited bore rule, were greatly in excess of those attained last year, while some of the single lap records were so very much faster as to make it apparent that some new restriction must be adopted next year—if there is to be a next where the grand prix is concerned—in order to keep speeds within a limit that tires may reasonably be expected to endure on such road courses as are now employed for the big international events. What I would like to learn is, How did the designers succeed in getting so much more speed out of their cars where they had to conform to a limited bore restriction, as compared with the cars of the year previous in which there was no limit to the size of the motor. I know that a great many things are possible with the motor car motor, but have not been able to explain this satisfactorily.—Efficiency.

It is a matter of common knowledge that a horsepower may be produced by the use of less than 10 pounds of metal in a motor, and, on the other hand, that it is quite possible to use 200 pounds, 300 pounds, or any quantity of iron, to achieve the same result. For instance, the average stationary motor of small size weighs anywhere from 100 to 250 pounds per horsepower, a 5 or 6-horsepower engine weighing more than half as much as a complete 30-horsepower car in running order. It is principally a matter of piston speeds and compression, and this accounts in large measure for the difference in the speed of the racing cars of the 2 years. Again, it is one thing to design a motor that will show the maximum economy, and quite another to produce one that will show the greatest output for its dimensions and weight, regardless of any

consideration of fuel consumption for the power delivered. Every motor has what may most aptly be termed its "critical speed." In other words, its rate of delivering work at which it is most economical in fuel per horsepower, and in order to achieve the latter end, it must be run at that speed. Hence, it cannot be said that this year's cars were faster than those of the year previous, because the latter were not run so much for speed as they were for economy. It would not have availed one of the competing drivers much to have beaten all his competitors by even half an hour's time, if he were stranded so much as a hundred yards away from the finish on the final round through lack of fuel, as his victory would have counted for nothing. The rules made the winner the first car to finish the distance on its fuel allowance, and the fact that many of them were unable to do so was probably due to their reckless use of fuel, as it is well known that a motor is very extravagant at extremely high speeds, owing to the amount that is wasted. Practice runs before the 1907 grand prix were mainly to find out just how far a car could run on the allowance granted by the committee, and just what speed it had to be run at in order to cover the distance. Many of the drivers learned both well in advance, so it is quite reasonable to suppose that in few cases were the cars let out to their possible speed at any time in the race, as that would have meant defeat in the last lap through lack of gasoline. Some combination of restrictions, such as the size of the motor and the amount of fuel, would appear to be the only logical method of bringing the possible speed down.

WANTS 1909 GLIDDEN

Bardstown, Ky.—Editor Motor Age—I would like to see a movement started in Motor Age, working in behalf of having next year's Glidden tour come through Kentucky. I think a route from Chicago through South Bend, Kokomo, Indianapolis, Louisville and Bardstown, Ky., would be filled with interest. A visit could be made to the Abbey of Gethsemane, Lincoln Memorial farm and Mammoth Cave, thence by way of Evansville to St. Louis and Denver. This route would be much more interesting than one by way of Peoria and Springfield, Ill., to St. Louis.—C. W. Wilson.

HORSEPOWER DEFINED

Shenandoah, Pa.—Editor Motor Age—Will you kindly tell me what is the real interpretation of horsepower? How far is it by road from Mahanoy City, Pa., to Chicago, Ill.?—A. Demeeter.



Horsepower is a rate of performing work, the foot-pound being the unit of work. James Watts figured that a horse was capable of lifting 33,000 pounds one foot per minute, or in other words, of performing 33,000 foot-pounds of useful work per minute, and he established this as a standard which has since been universally followed. The distance from Mahanoy City, Pa., to Chicago, Ill., depends very largely upon which way you would go, as it is possible either to start northward toward Elmira, or southward toward Harrisburg or Altoona, in each case connecting with a trunk line highway to Chicago. An average would put the distance between 800 and 900 miles.

RECHARGING A VESTA BATTERY

Tryon, Okla.—Editor Motor Age—Will Motor Age state whether or not it will injure a 6-volt 60-ampere Vesta battery to partly recharge it, where time is not an object, and it is desired to stop a few hours?—W. A. Graham.

It will not injure a Vesta battery of the class named to recharge it at any town you may pass through; in fact, it could be left recharging for 20 hours without injury. In recharging be careful to connect the positive to the positive, the negative to the negative, and use but a 3-ampere rate of current. In order to bring the voltage down it is best to use three 32-candlepower lamps, which should reduce the voltage to approximately 7 volts. In recharging, direct current must be used, except that alternation may be used if a rectifier is fitted to the recharging equipment.

GAS FORMS IN TIRES

Rogers Park, Ill.—Editor Motor Age—With reference to the letter published in the Readers' Clearing House, August 6 issue, signed by T. H. Sessions, De Ridder, La., regarding the formation of gas in tires: I am glad to know that Mr. Sessions' investigations have led to the conclusion he states, for they are exactly in line with my own. For years past I have bothered with frequent blow-outs, which seemed to occur mostly in the tires inflated the longest. After a little experimenting I concluded that the heat and friction to which the tires were subjected generated a sort of gas which eventually became too strong for the tire and finally resulted in a blow-out. As the frequent pumping of fresh air in the tires necessitated no little hard work, I began looking around for a power or automatic pump to do the work, and finally located one made in Chicago by the Eberman Auto Appliance Co., whose advertisement I also noticed in Motor Age. I finally had one of these Eberman pumps placed on my car about 2 months ago and have regularly deflated my tires and pumped in fresh air at least once a week ever since, and at an expense of only 8 or 10 minutes' time. I have not had a blow-out since I tried the scheme.—Henry Welles.



Motor Car Shop Kinks

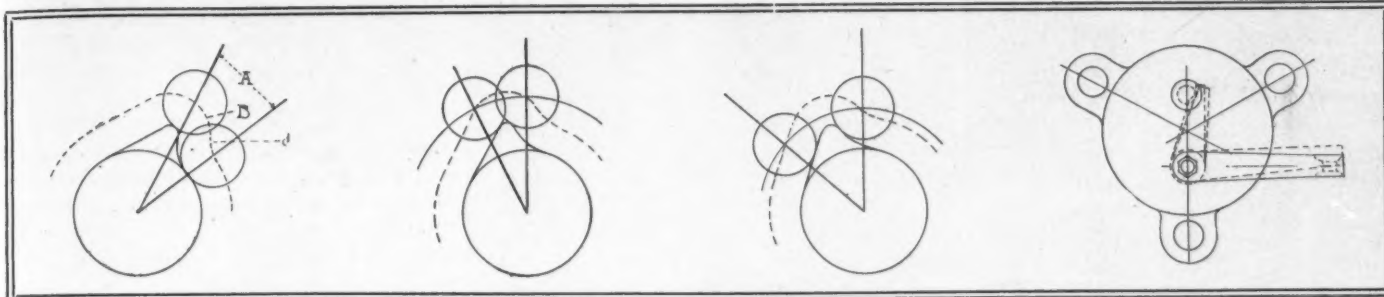
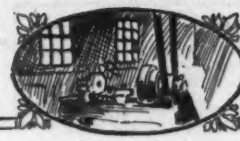


FIG. 1

FIG. 2

FIG. 3

FIG. 4

THERE is much more involved in the successful operation of the make-and-break ignition system than simply correct timing of the break and proper insulation of stationary electrodes. In addition to these primary requirements are the following: A—The contact must have a sufficiently long dwell to permit current to build up in the armature winding or the spark coil. B—The contact points, if of steel, must be reasonably clean and comparatively free from oil. C—The rocking electrode must not be worn so loose in its bearing that the moment of break or the certainty of good electrical contact can be affected by its wobbling. D—The adjustable rods or stems actuating the igniters must be true and free in the cupped ends of the outer rocking arms. Fig. 1 shows approximately the customary section of the igniter cam. It will be seen that both the lifting and the descending faces are angular. In other words, contrary to the common practice in marine and stationary engines, it is not what is known as a "snap" cam. The object of this is to permit the cam to turn backward in case of a back kick without damaging the mechanism. The effect of this angular descent is to make the precise moment of rupture a matter of some importance, since the arc traveled by the crank during the roller's descent is double the arc A. As is evident from the dotted line indicating the path followed by the center of the roller, the movement of the roller is slow at the top of the cam, and consequently the spark produced if the break occurs, that is, with the center of the roller at B, is not so strong for the same flow of current as it would be with the roller at C. Again, contact is made when the roller is at the same distance from the center of the cam as on the break, and the dwell in contact is therefore comparatively short in Fig. 2 and much greater in Fig. 3, as the angles shown in dotted lines indicate. It is easily possible for the dwell to be too short to produce an effective spark, and when a magneto is the source of current it is a safe rule that the electrodes shall make contact

Make-and-Break Igniters

during at least the upper half of the lift.

If the contact points are of iridio-platinum they will wear very slowly, and the spark time will be but slightly affected by their wear. If, however, the contacts are steel they will burn away rather rapidly. This has the effect of changing the position of the outer arm of the igniter as shown in Fig. 4, and both reduces the dwell and causes the break to occur earlier than before. The rate at which this progressive change in timing goes on will depend partly on whether the magneto or battery is used, being usually greater with the latter, and on the area of the surfaces in contact, being obviously greater when the available surfaces are small. An insulated stem which has been in use for some time and has been turned repeatedly to bring fresh surfaces in contact assume finally a form resembling that at A in Fig. 5, and the contact finger has probably acquired the shape shown at B in the same figure. When this condition is reached, if the contacts are continued further in service, it is probably necessary to change the angle of the outer arm owing to the limit of the igniter rod's adjustment having been reached. This arm usually is a taper fit on the rocking stem, and a little careful trial will establish a suitable position for it. It is essential occasionally to file the contacts clean and smooth.

In case the rocking stem wears loose and shows a tendency to wobble, it may be kept fairly steady by inserting a washer at the outer end of the bearing as at A in

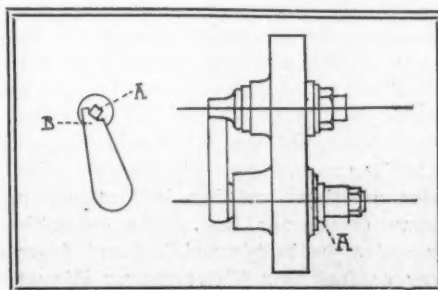


FIG. 5

FIG. 6

Fig. 6. It should be remembered that the wobbling tendency is chiefly promoted by the igniter rods themselves being crooked and bearing sidewise against the rocking arms. This has a further objection in that the friction of the rods against the arms on the first downward movement is more or less liable to cause a premature break.

The synchronizing of igniters is most easily and accurately done with the aid of one or two cells of battery and a voltmeter. If the battery is part of the standard reserve equipment it is not necessary to make any change in the connections, except to break the connection from the switch to the bus bar and insert the voltmeter. Then the spark lever is fully retarded and the flywheel turned to one of the dead positions, which are usually marked on it. This position should be the breaking position for whichever igniter is in action at that instant.

While contact is established the voltmeter will indicate the fact, and the instant contact is broken the needle will return to zero. Adjust the igniter rod up or down until on two or three successive trials the break occurs at exactly the right point, and see that tightening the lock nut on the igniter rod does not change this adjustment. Turn the crank again and watch carefully the movement of the igniter rod after contact is made. If it does not move up half its total travel after contact is made, take off the igniter plate, slacken the taper fit of the outer arm on the rocking stem, and turn the arm very slightly downward. Replace the igniter plate and readjust the igniter rod. When the first cylinder had been satisfactorily timed, take the second, and so on. It is best to cut out all the cylinders except the one under test, thereby saving confusion. If the flywheel marks cannot be found, ascertain the top piston position by a wire or otherwise, chalk the flywheel, and measure halfway around the rim with a string for the firing position for the other pair of cylinders. This is more accurate than trying to determine the flywheel position from the piston position at the top of bottom center.



From the Four Winds

N S E W



VENTRILOQUIST REYNARD AND "DUMMY" IN A HAYNES CAR

Daily Double Century—A 200-mile run per day for 100 days is the strenuous test on which a Chalmers-Detroit 30 car started last Monday. The course laid out is from Detroit to Pontiac, Mich., and return—26 miles each way. Four round trips will be made daily, two in the morning and two in the afternoon. Visiting dealers and customers are taken on each trip. Accurate records of mileage, consumption of gasoline, oil, etc., will be kept. It is the intention to continue this gruelling test from now until November. In that time the car will have covered 20,000 miles.

Connecticut's Bad Roads—Hartford county, Connecticut, motorists are not at all pleased with the campaign being carried on by the state highway commission. Complaints are frequent that there is not a sign of the promised improvement within 25 miles of Hartford in any direction, and drivers and owners complain at excessive wear of tires caused by bad roads. Connecticut up to this season has had good roads, and many have been improved, but not within Hartford county to any extent, so it is said. A striking example of exceedingly poor highway construction is a short stretch on the Windsor road south of Keeney park in the vicinity of Hencoop bridge. A well-known motorist is authority for the statement that this spot has been in wretched condition for at least 12 years. Another thing that arouses Hartford's ire is that a 4-mile stretch between Middletown and Meriden is to be macadamized, while some of the more important stretches along the Boston-New York route are put off until some

other time. Members of the Automobile Club of Hartford have prevailed upon the commissioner to right matters.

Road Enthusiasts Meet—One of the most important road conferences ever held in the middle west was that at Richmond, Ind., on August 8. Road supervisors and county and township officials, together with farmers and motor car owners from one Ohio and five Indiana counties, attended. Prior to the program there was a parade in which about 100 cars participated. The principal speaker was M. O. Eldridge, road expert with the United States department of agriculture. A petition was presented to him asking that the government build 1 mile of model road in the vicinity of Richmond.

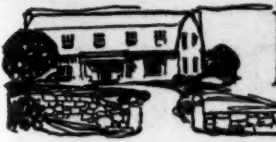
Ventriloquist's Queer Stunt—As the result of a number of amusing experiences in a motor car with a "dummy," Edward F. Reynard, an Indianapolis ventriloquist, has arranged a vaudeville act in which a motor car will play the central figure. The act will be put on in the principal vaudeville theaters this season. During his summer vacations Reynard has toured Indiana and other states with a boy "dummy" riding on the hood, which carries on conversations along the road. By means of this and ventriloquism he has had great fun and has avoided arrest a time or two. It is related that a country constable stopped him for fast driving on an Indiana road. Reynard threw his voice under a bridge, making it represent a woman crying for help. The constable ran under the bridge and Reynard drove away as fast as a 60-horsepower Haynes could carry him. The act he will put on

will represent a rural scene, with motor cars and "dummies" representing country folk. Reynard will drive on the stage in his motor car and carry on humorous conversations with the various dummies.

Handy for Railroad Men—Paradoxical as it may seem, it is true that the Wisconsin railroad commission cannot get along without the motor car in its investigation work. To study the question fully the members of the commission hired a number of cars last week to go over the proposed route of the Milwaukee and Fox River Valley Railroad Co., whose entrance into the territory around Lake Winnebago is being fought by other lines already operating in the territory. Fond du Lac business men accompanied the commissioners in motor cars and entertained them en route at summer resorts. The commissioners expressed themselves as highly satisfied with the mode of transportation and will use the car more frequently in the future in their work.

Tag Problem Solved—The Massachusetts highway commission has finally solved the problem that left foreign tourists from out of the state liable to arrest if they went to the Bay state and operated without a license. The commission has announced it will issue temporary or restricted licenses which will cover tourists until they can see the state examiner. In order to get these, however, one must write to the commission and notify it that such a license is wanted. Then there follow the mailing of the license and the arranging for a date to see the examiner, etc., and finally the getting of the state license. The commission has not solved the problem of notifying intending motorists what they must do, and those who do not know about it will either keep away, take a chance, or get arrested.

Feat of a Woods Electric—One of the most notable feats in motoring in the northwest for some time was the record trial run by the Woods electric last week. F. J. Newman, manager of the Woods Motor Vehicle Co., and Carl J. Metzger, sales manager, drove a 1909 model Queen Victoria Woods from Chicago to Milwaukee, on one charge only for the 95.3 miles, in 8 hours 43 minutes. Recharged, they drove the machine from Milwaukee to Sheboygan, Wis., 58.2 miles, on one charge, in 5 hours 55 minutes over bad roads. On Saturday of last week they continued the run from Sheboygan to Elkhart Lake, Wis., in record time. On Sunday the car was back in Milwaukee, and on Tuesday it started again on a 1,600-mile tour to Lincoln, Neb. Over Sunday the car was the object of interest to hundreds of motorists in the city of Milwaukee.



News from the Motor Clubs



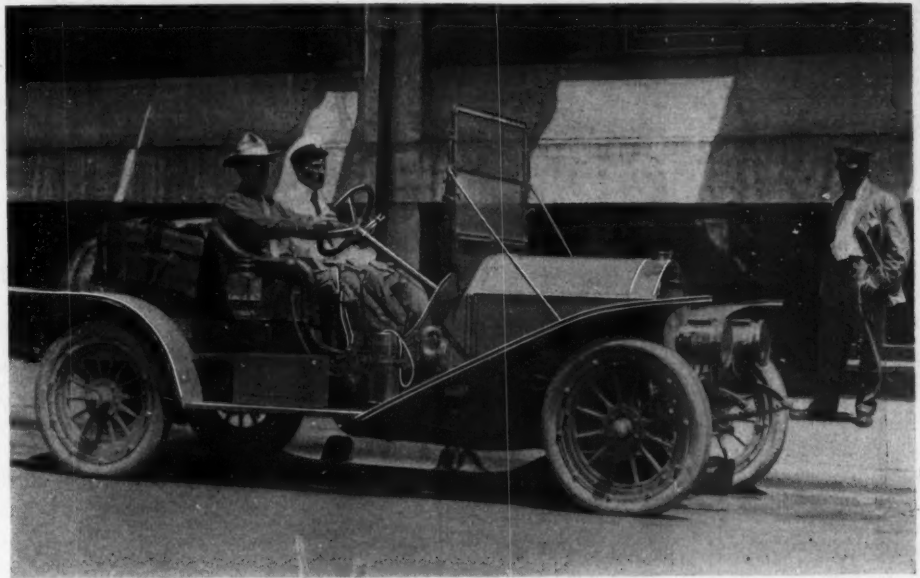
Motor Parade Planned—A feature of Hartford bridge day at Hartford, Conn., when the formal opening of the new stone bridge across the Connecticut river is to be celebrated, will be the motor parade. It has been promised that the original Selden buggy will be in the procession.

After Ohio Boulevard—An active campaign looking to the establishment of a boulevard connecting Cleveland, Toledo and Detroit is to be inaugurated by the Toledo Automobile Club, in conjunction with others interested in the good roads movement in Cleveland, Lorain, Detroit and other intermediate points.

Badgers Going Touring Again—The Milwaukee Automobile Club will give another pleasure tour for members on August 22. The route will be from Milwaukee to Manitowoc, Wis., and return. Saturday night will be spent in the city of Manitowoc, where royal entertainment has been provided by enthusiasts. The return will be made Sunday.

Stopping Scorchers—The present liberal law of the state of Connecticut is due to a great extent to the hard work of the Automobile Club of Hartford and the Connecticut Automobile Association. Of late the town officials have been somewhat zealous to catch speeders. Investigation reveals that most of the scorchers are from other states. Both the Hartford club and the state association are doing all possible to discourage speeding and to encourage sane and conservative operation at all times. If any member of either body is "caught with the goods," so to speak, he pays the price. Secretary G. K. Dustin, of the Connecticut Automobile Association, has appealed to the various clubs of surrounding states to prevail upon their members to drive cars with care through the state of Connecticut.

Another Club for Denver—Preliminary steps have been taken for the organization of the Denver Motor Club. The prime motive is to throw off the yoke with which existing conditions have burdened the necks of Denver motorists—the burden of neglected work on the city's streets by contractors and the dilatory way in which municipal improvements are carried on in violation of city ordinances. It is also the purpose of the new club to solicit aid from all motorists as well as horsemen all over the state for the mutual benefit of both in the improvement of roads and streets. Dr. E. F. Dean is temporary chairman, and Dr. Ralph Taylor, E. R. Cumbe, W. D. Nash, Ralph Smith and F. L. McFarland are a committee to draft a constitution and by-laws. A committee to report on the matter of a clubhouse and fur-



HARRY WESTCOTT, GLOBE GIRDLER, IN A STODDARD-DAYTON

nishings is composed of J. H. McDuffee, M. I. Stevens, Dr. C. C. Bundson, J. F. Payne and D. W. Burns.

Busy Posting Signs—The sign-posting campaign of the Automobile Club of Hartford is being rapidly carried on. All the principal routes throughout that section of the state will be posted.

"Honor" System Failing—After a month's trial of the "honor" system in the neighborhood of Philadelphia it has been claimed that the number of persistent violators of the speed laws has not materially decreased, despite the efforts of the law-abiding element among the motorists to bring them to book. A number of townships have announced that if by the end of the present month these infractions still continue, road patrols will be reestablished, and the trapping system will once more flourish among the motorists with renewed virulence.

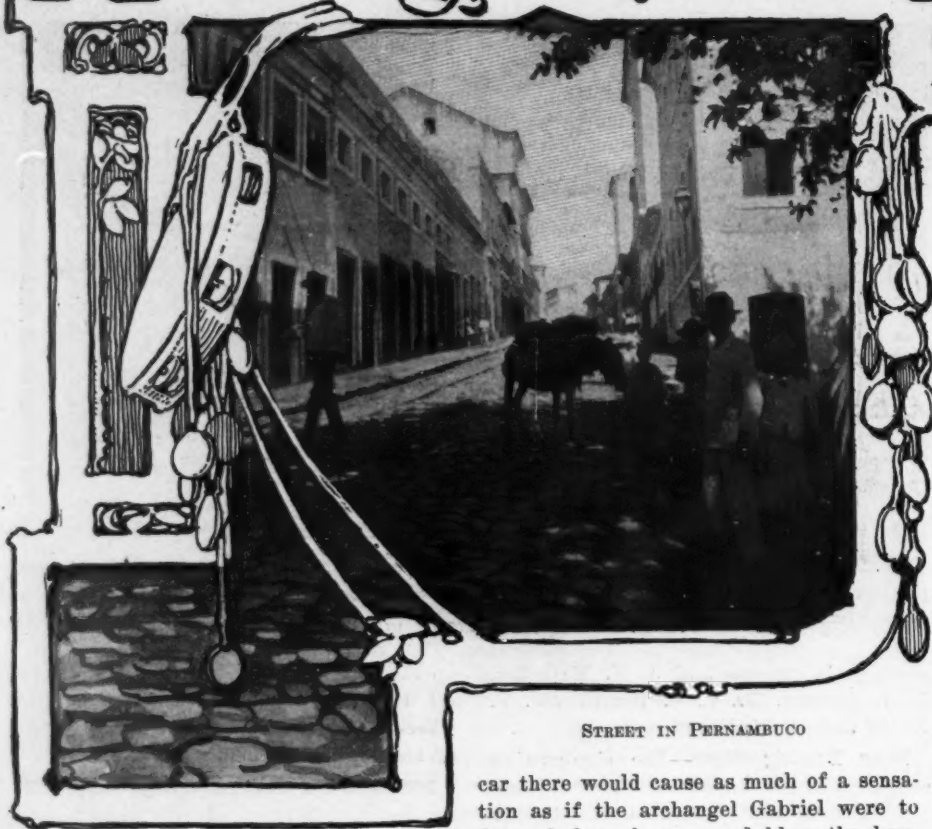
Another Globe-Girdler—Harry Westcott, of Chicago, and Walter Barnett, of Denver, Colo., left Dayton, O., in a Stoddard-Dayton roadster on Tuesday, August 4, for a trip around the world, planned to consume at least 2 years. It is to be a pleasure trip in every sense of the word, and the car lacks even the spectacular mountain-climbing, desert-covering equipment which almost all of the cars which have even made trips from the Atlantic to the Pacific generally carry. One of the unusual features in connection with this is that through the employment of the Fisk demountable rim Mr. Westcott has been able to equip his car with flanged wheels for use on railroad tracks where roads are not perfectly serviceable. It is but the work of a few moments to jack

up the wheels, remove the five bolts, take off the tires and substitute a flanged wheel, which can be adapted to any gauge of steel railroad track.

Milwaukee's Orphans' Day—The Milwaukee Automobile Club will make happy the hearts of 300 or more orphans of Milwaukee on September 1 by giving the little dependents the annual ride. No fewer than fifty cars will be placed at the disposal of the orphanages of the city, and the owners will act as drivers, considering it a special privilege to make the little ones happy. The orphans will be taken over the boulevards and principal streets, visiting each of the five large parks and many of the playgrounds where the more fortunate children disport themselves.

Match Race Planned—Milwaukee will see one good contest this season on September 19, when a Pope-Toledo and a Locomobile will be pitted against each other in a 50-mile race for a stake of \$1,000. The racing committee of the Milwaukee A. C. will have charge of the contest. The state fair park track will be used. Robert Drach, who drove a Locomobile to a world's record for 24 hours on this track in 1907, making 1,159 miles, will pilot the Locomobile. The Pope-Toledo's driver has not yet been chosen. The Milwaukee A. C. is hanging up the purse of \$1,000. While there is much opposition to racing on circular tracks, especially on a horse track—although the state fair course is considered one of the best in the world—it was decided to use this track because there was no straightaway course available. The controversy between the owners of the cars is of long standing.

Motoring in South America



STREET IN PERNAMBUCO

THIS is written in Rio de Janeiro in the latter part of June of the present year. I left New York, May 1, on the steamship Gunther, with a view of introducing an American motor car in South America. I also made up my mind to study the motor car question from all points of view, but herein I shall confine myself to report only such observations as may be of interest to readers of Motor Age. In Bridgetown, on the island of Barbados, where a short stopover was not sufficient to go deeper into the matter, I had a chance to notice that the motor car has made its appearance even on the smaller islands of the Antilles. I even read in the Barbados Advocate of a motor car accident which had occurred a few days before my arrival, and, in the same paper, I saw an advertisement of the single-cylinder Brush.

But in vain did I look about for motor tracks or gasoline and exhaust smells in Cabedello and Parahyba do Norte, the first ports of Brazil where I had a chance to spend some time ashore. The first place is only a small village, but Parahyba has a population of 30,000. In spite of this fact, no jolly motorist ever has sounded his horn in Parahyba, and dogs and chickens are still living peacefully there and crossing the frightfully-paved streets without danger to life and limb. Verily I believe that the appearance of a motor

car there would cause as much of a sensation as if the archangel Gabriel were to descend from heaven and blow the horn of resurrection. Certain it is, I had no desire to risk my neck in attempting to drive through the city.

It was different in Pernambuco, my second landing place on the coast of Brazil. There are said to be 280,000 people living in this city, ten or twelve of whom must surely have had more money than sense. I hope in the interest of the motor trade that none of these will ever read this article, for I was told there were that many motor car owners in Pernambuco. How in the world any man, outside of a lunatic asylum, could get the idea of buying a car for use in this city is more than I can comprehend. I had a chance, through the courtesy of one of these owners—again I hope he won't read this—to take a 2 hours' drive in a Clement-Bayard in the streets and environs of Pernambuco. It was lucky I had the idea of taking a snap shot of the car mentioned as it left the courtyard of my host, for after we started I was no longer in condition to think of anything but how best to resist the jolts and shocks I received during the trip through this city of Pernambuco.

Similar conditions meet the motorist in Bahia, a city of 300,000 inhabitants, some

300 miles south of Pernambuco. There I met a man who knew a man who claimed to have seen a car in town, but whether this is really so or whether the assertion is imaginary, I was unable to ascertain. At any rate, the fact that I did not see a car in Bahia is proof positive to me that the people of this city are more endowed with gray matter or common sense than those in Pernambuco, for the pavements are certainly such as I have seen only in some of the worst streets of Constantinople. And what a delight it would otherwise be to motor in the winter months in and around Bahia amidst a luxuriant nature such as is rarely met with by touring motorists.

I had been told much and read much in magazine articles, consular reports, and other amusing literature about the late progress of South American republics, and especially that of the cities of Buenos Aires and Rio de Janeiro. Neither was I disappointed in the latter city, to which I proceeded from Bahia—by sea, as you may well imagine. There is not a mile of road in the country, outside the capital and Sao Paulo, that could be safely negotiated by a motor car, unless it be on a force tour to advertise a car, as was done lately by a French count, who made the trip between Rio de Janeiro and Sao Paulo, but with the resulting ruin of his car and an expenditure of several weeks' time. The distance, by the way, is less than 300 miles.

There are magnificent drives in Rio de Janeiro, of which I will speak a little later. For the moment, I want to dwell on my experiences in getting my Stoddard-Dayton out of the custom house and the necessary license for my demonstrator to drive the car in Rio. I had met on the steamer the Austrian consul in this city, who gave me the cheerful information that it usually takes from 2 to 3 weeks, or even more, to clear a car from the "alfandega," which is Portuguese for custom house, and it was not exactly with an easy heart that I looked forward to the red tape and annoying formalities of this procedure. But I have had business dealings with Latin-Americans before, and had, only lately, learned a lesson in Havana, the moral of which now proved useful to me.

I succeeded in clearing my car within 48 hours, but the hours of running, waiting, swearing and talking in English, French, German, and, with the help of an interpreter and native custom broker, in Portuguese, were agonizing. I wanted the car treated as a tourist's, or a sample car, that is, I only wished to deposit the

EDITOR'S NOTE—The above article on the motoring conditions in South America is from the pen of Sigmund Kraus.

amount of duty in the nature of a guarantee as a safeguard for me against the possibility of re-exportation, and although samples of other goods had previously been admitted on these conditions, mine was the first case of a motor car and had, therefore, no precedent. There were long consultations with various officials, and I was sent from Pontius to Pilate, but in the end I gained my object. Not, however, without using my influential letters of introduction to the Brazilian secretary of state, Baron de Rio Branco, and the secretary of the navy, Admiral de Alencar. At that, I had to put in a written and stamped petition to the custom house authorities at this place.

But it was only now that my real troubles started. I had the Stoddard-Dayton out of the "alfandega," but was not allowed to run it on the streets. To make the story short, I only state that for 5 days I wore the stone steps of the prefecture smooth in a chase from one official to the other, all of whom were politeness personified, but always showed me some clause in an ordinance or law which forbade just the thing I wanted them to do. At last I got my precious number and four or five documents which entitled me now to chase through the streets of the Brazilian capital with my car. One does not drive rationally here; one chases at a go-as-you-please speed, even in the busiest districts. The cost of these documents figure up as follows: For a motor car license, \$21.66; for examination of car, \$21.66; for examination of chauffeur, \$11; for chauffeur's license, \$6.66.

The examination of the car consisted of an official looking down from a second-story window on the motor car, which stood in the street; that of the chauffeur in making a tour around the square in front of the municipal building. Then I got my number, 872. In regard to number in Rio de Janeiro, the stranger is easily deceived if he judges the quantity of motor cars by them. The numbers run considerably over 1,000, although there are in all only about 300

cars in the city. This is explained by the fact that the city is divided into districts, numbered from one upwards, and the first or first and second figure of the number

carried on the car denotes simply the district in which the machine is registered. Thus my number 872 meant that the owner lived in the eighth district and possessed the seventy-second car registered therein.

My newspaper connections in the United States and a letter of introduction which I carried from the Chicago Press

length on the abuses to which I had been put at the prefecture. They also started a campaign for the abolition of the antiquated red tape and the introduction of a system, formed after the French pattern, in regard to tourist cars and samples imported for transitory use. Much amusement was caused in the city

by the clever way in which an illustrated comic weekly, in a whole colored page, brought the matter to public attention, under the title of "Adventures of a Distinguished American Guest." The automobile club, too, took a hand in the affair, and thus I am quite proud of having given the initiative to a much-needed reform.

The cars owned at present in Rio by private owners and livery garages are principally of French origin, with a sprinkling of English, German, Italian and American cars. The styles of cars vary, but the limousine and large touring body prevail, and some fine specimens may be seen during the semi-weekly *coros* along the bay, when gaily dressed women and children fill the vehicles which are driven up and down the Avenida Beira Mar between 5 and 6 p. m., Wednesdays and Saturdays.

Of livery cars, there used to be quite a large number on the streets, but lately they have diminished considerably, on account of a police ordinance which restricted their charges, and, at present only old and somewhat dilapidated vehicles stand for hire on the street. The price per hour was formerly 15 milreis—3 milreis make \$1—for the first and 10 milreis for subsequent hours for two persons; additional passengers, 1 milreis per person an hour. The charges now are 8 and 4 milreis, respectively, and the livery car owners claim not to be able to make a profit at these prices with decent cars in service. They rent now from their garages at the old prices and wait for a change in the police government and a return to the old rates. With that a renewed boom in the motor business is also expected. Among the livery cars on the streets I can-

not omit to specially mention a curious and ridiculous little German runabout, called *Piccolo*; air-cooled, with two diagonally placed little 6-horsepower cylinders,



MONROE PALACE IN RIO JANEIRO
AVENIDA CENTRAL IN RIO JANEIRO

Club got me next to the newspapers, and eight of them gave me most flattering notices of welcome in Brazil, and several of them used the opportunity to write at

all exposed, and room for only one person aside from the driver. About a dozen of these are in use, but not much in favor in this country.

Motoring is practically confined to the city limits, and only the newly constructed avenues and streets afford pleasure. But these are really fine, and the splendid asphalt pavement of the Avenida Central, Uruguyana, Rua Florian Reixotto, and other thoroughfares, as well as the fine macadam of the Avenida Beira Mar, are motor roads of which any European city might be proud. As to scenery along the latter road, during my travels in many

Another thing which mars the pleasure of the motor tourist, and of native motorists, too, for that matter, is the fact that the price of gasoline is almost prohibitive. A case containing two cans of less than 5 gallons each costs from 16 to 22 milreis, according to where and in what quantity you buy it. This is a severe drawback to the pleasure, and has, together with the corresponding costliness of repairs, spare parts, accessories, and other supplies, tended to retard the development of motoring and to cause many devotees to again drop the sport after having followed it for a time. The present financial crisis

precipices, past cascades and magnificent lookouts, and always at a grade which often reaches 16 to 18 per cent. This road runs for several miles up the Tynca, thence to the Gavia mountain and down again to the other end of the city, through virgin forest dotted only here and there with a little hut or house on the lower altitudes. Its quiet and coolness makes it a favorite excursion for motorists, in spite of its dangers, to which a one-track electric trainway, taking half the width of the driveway, adds considerable. My Stoddard-Dayton performed, however, on the Tynca, a trick which very few cars here have so far accomplished. It went up as far as White's hotel on high speed with four passengers in it. To reach Petropolis, the summer residence of many Rio citizens and the steady abode of the diplomatic corps accredited to Brazil, is, at present, impossible, although that city is within easy motoring distance. Only one man has so far driven there under incredible difficulties, and that, like the tour to Sao Paulo, to advertise a certain French car. Such ad-



MOTORING IN PERNAMBUCO

foreign lands, I never have seen anything to approach it. This magnificent avenue has been constructed within the last 3 or 4 years, as have been most modern improvements in Rio de Janeiro, and is, as yet, not quite finished, but the work is rapidly progressing and within a short time the city will have, perhaps, the finest motor driveway in the world.

Altogether, motoring in Rio in a climate where the winter corresponds to our June in the middle states, might be an unalloyed pleasure were it not for the unaccountable habit of the natives to prefer the middle of the road to walking on the broad sidewalks, and to walk at that, like some motorists, neither looking to the right nor left and without paying attention to horn signals. Only the rattling clamor of the exhaust will cause them to pay attention and jump aside immediately in front of the car with a curse at the driver. That persons are not killed and mutilated every day in the streets of Rio, is really a wonder and speaks well either for the skill or the carefulness of the chauffeurs in the Brazilian city.

here is also a reason why, for the present, there is a perfect stagnation in trade and sport, and it looks as if there would be no improvement until times get better.

If I have said before that the Avenida Beira Mar offers scenically unsurpassed beauties, I want to modify this statement. I had, for the moment, forgotten, that Rio de Janeiro has in its immediate environs, in the mountains which surround the city on all sides, a driveway the like of which no other capital can boast. Within 10 minutes from the center of the city a narrow but good road winds up Tynca mountain in hairpin curves and spirals, leading along steep



AVENUE OF ROYAL PALMS IN PERNAMBUCO

vertising seems to be effective here.

I venture to say that should a motor road to Petropolis be built, as the government is said to plan, the number of cars in Rio de Janeiro would be doubled in no time. I have been told by the amiable president of the Club Automobili Brasileiro, Count de Almeida, that the project stands a good chance of realization.

In conclusion, I must say a few words of this club which is the only one in Brazil. It has about 200 members, belonging to the best class, and is a well-appointed place for social purposes. Its building contains no garage, however, and serves as a rendezvous of the motorists.

AMERICAN DUST PROBLEM IS DISCUSSED

WASHINGTON, D. C., Aug. 8—A monograph on dust preventatives has been prepared for the department of agriculture by Logan Waller Page, director of the office of public roads of that department. As this important question is now of such interest to the motor world, the following excerpts from the monograph will be of particular interest. Mr. Page says that the most important problem which has confronted highway engineers in recent years is the suppression of dust on roads. Not until the introduction of motor vehicles, however, did this become a factor of sufficient importance to engage the serious consideration of road builders and road users. Fast motor traffic has reached such proportions at the present time as to shorten the life of the most carefully constructed and expensive macadam roads to a great extent and to keep them in a loose and uneven condition.

The macadam road has been developed with the object in view of withstanding

the wear of iron-tired horse vehicles, and it had met successfully the demands of suburban and rural traffic until the advent of the motor car. When in its highest state of perfection the rock from which such a road is made is so suited to the volume and character of traffic which passes over it that only an amount of dust is worn off sufficient to replace that removed by wind and rain. The dust remaining should be just enough to bond the surface stones of the road thoroughly, forming a smooth, impervious shell. A road of this character wears uniformly under the traffic for which it was designed and always presents an even surface. When such a road is subjected to continuous motor car traffic entirely new conditions are brought about. The powerful tractive force exerted by the driving wheels of motor cars soon disintegrates the road surface, says the federal report. The fine dust which ordinarily acts as a cementing agent is thrown into the air and carried off by wind or is easily washed off by rains. The pneumatic rubber tires wear off little or no dust to replace that removed by natural agencies. The result is that the stones composing the road become loose and rounded, giving the greatest resistance to traction, and water is allowed to make its way freely to the foundation of the road.

There is another important aspect of the dust problem to be considered. Until the general use of the motor car most of the dust formed on the road was held on the surface until worked into the gutters by the action of rain and traffic, and was not a source of annoyance except in extremely dry and windy weather. With the coming of the motor car, however, conditions have changed, and the dust problem has become more serious. While it is true that the wear caused by the passage of heavy rubber-tired motor cars is very slight, experience has proved that they are responsible for the removal and distribution over surrounding property of the dust formed by other kinds of traffic which uses the highways.

Although the facts stated above may be considered in a sense as a severe arraignment of the motor car in its relation to the public road, it should not be forgotten that there is another phase of the subject worthy of serious thought. The application of mechanical arts to the comforts and conveniences of civilization must inevitably bring up new problems, which can only be solved by patient experiment. While presenting new problems, these influences generally furnish the means of solving them. In this way the motor car, while tending to destroy macadam road surfaces, has been an important influence not only in the building of many miles of well-constructed highways but also in rendering most urgent the study of road pre-

servatives. The dust nuisance existed before the advent of the motor car, and if the experimental work now being done is successful it will be a demonstration of the really beneficial effect that the motor car has had upon the development of the art of road building.

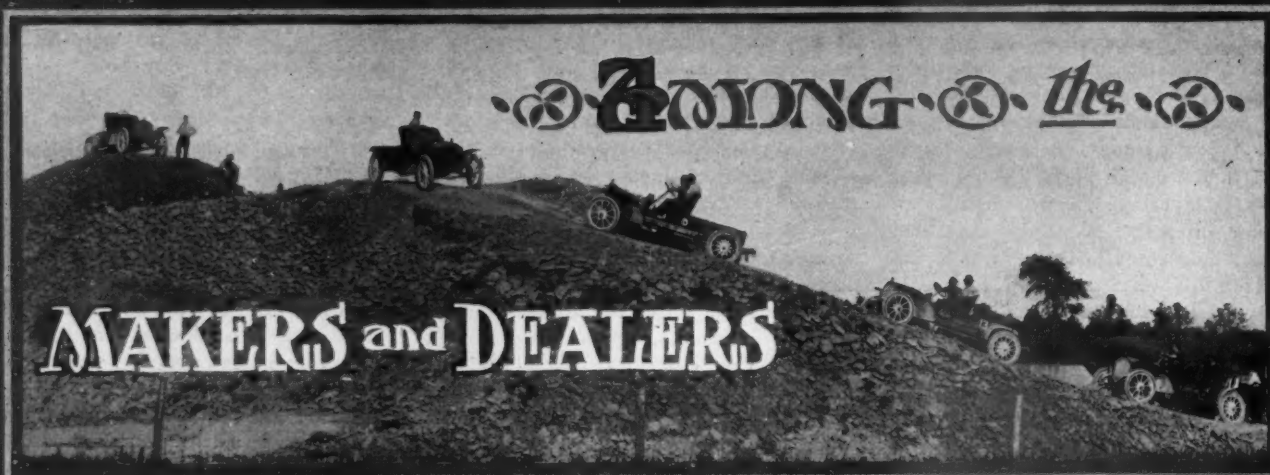
Many remedies have been suggested and tried for meeting this new condition, but a perfectly satisfactory solution of the problem is still to be found. Some success has attended the efforts of those who have sought to find a cure for the evil, and this is encouraging when the many difficulties to be overcome in the treatment of thousands of miles of roadway are considered. It is apparent that this problem can be solved only by the adoption of one or two general methods: By constructing roads in such a manner and with such materials as to reduce to a minimum the formation of dust; and by treating the surfaces of existing roads with materials that will give the same result.

Bay State Events

Boston, Mass., Aug. 10—The month of September promises to be a record-breaker for motoring events in Massachusetts, for there are scheduled now four contests that will be of widespread interest. The first and biggest of these will be the road race at Lowell on Labor day for the Butler Ames trophy. This race will be 250 miles long, and all stock cars are eligible. On September 11 the Springfield Motor Club is to have a hill-climb which will be held on Wilbraham hill. The entries close September 7. There are twenty-one events on the list. The first five classes are divided up according to horsepower from 75 horsepower down to 15 and under; the next six are divided according to price from \$850 and less to \$4,000 and over; the next four for piston area, and the remainder free-for-all classes. Some time during the week following the Worcester club will have another hill-climb on Dead Horse hill. The date has not been settled yet, but it will be in the middle of the month. September 23 and 24 the Bay State club will hold its 24-hour endurance run to the White mountains. This run will start at 10 September 23 and go to Bretton Woods by way of Portsmouth, then up through Conway and the Crawford Notch. The return trip will be made through Bethlehem, Plymouth and down the Merrimac valley. There will be controls at different points and 2 hours will be allowed for meals. The run will end at noon September 24. The entrant may have as many drivers as he cares to put in. The rules will be in some ways similar to those used on the Glidden tour. Sunday E. A. Gilmore, V. A. Charles and J. C. Kerison went over the road to map out controls to be used in the test.

Will Revoke Licenses

Boston, Mass., Aug. 12.—The highway commission made an announcement last week that is bound to have an effect on the custom of taking out cars without the permission of the owner. A case was being heard where a chauffeur had done so, but he did not appear at the hearing, so his license was revoked. In making the announcement Chairman Parker stated that hereafter when any case of a chauffeur taking out a car without the permission of the owner is brought to the attention of the commission the license of the driver will be instantly revoked. The commission has not come out publicly yet and made any announcement as to how much farther it intends to go in the matter, but the Motor Age correspondent has it on good authority that the garage men will have to live up to the law relative to keeping track of the entering and leaving of motor cars from in their buildings. The law states plainly that a record must be kept of every car entering and leaving, but this has been looked upon as a joke and the book has been tossed about and in some places no record has been made half the time. As long as the commission has started out to check the evil of stealing motor cars there is no doubt but what it will be done thoroughly, and by noting how the records are kept may lead to a reform. There is no law to have an inspection made of the records at any regular intervals and so no one outside the garage has any idea how they are kept. However, there promises to be a new era in the way of a reform, and some of the chauffeurs who take a chance at joy riding may find themselves without a means of earning a living when the commission gets through.



PACKARD PEOPLE USE RIFLE RANGES FOR HILL-CLIMBING TESTS

Handling Imported Berliet—The Berliet Import Co., Michigan avenue and Twenty-first street, Chicago, is handling the imported Berliet.

Bunker Changes—E. F. Bunker, of Boston, Mass., formerly associated with a well-known eastern firm in the manufacture of motor car springs, has accepted a position with the Perfection Spring Co. of Cleveland, Ohio.

Webb Company Officers—The officers of the newly incorporated Webb Motor Fire Apparatus Co., of Vincennes, Ind., are as follows: President, Edward Watson; vice president, A. C. Webb; secretary, J. Napier Dyer; treasurer, Charles Bierhaus; general manager, John E. Bayard.

New Stepney Agents—The following agencies for the Stepney spare wheel have been appointed: T. H. Walker & Co., Detroit, Mich.; L. Fay Tyler, Bay City, Mich.; J. P. Beck, Saginaw, Mich.; Thomas D. Buick, Flint, Mich.; Sears, Nattinger Auto Co., Des Moines, Iowa; T. E. Burnside, Columbus, Ohio. The Phoenix Rubber Co., San Francisco, has placed an order for 1,000 wheels, and has taken the agency for that city.

Rifle Range Utilized—The testing corps of the Packard Motor Car Co. recently discovered and obtained the privilege of driving on the embankments of the new Michigan state rifle ranges, near Detroit. These embankments, or butts, as they are called in military parlance, are clay and gravel hills 40 feet high and with stiff grades, the steepest of which is 45 per cent. The construction company men, and afterwards the United States troops now using the ranges, were much interested in the way in which a dozen cars at a time were driven over the hills, some from one side and some from the other. The Packard testers are now busy on 1909 cars, of which approximately 100 already have been delivered to purchasers. The

factory is running a full force of 2,500 men and this is being increased each week.

Sells His Interest—General Manager Watkins has sold his interest in the Beaver Mfg. Co. of Milwaukee and has retired from the concern.

Cleveland Trade Brisk—The motor car business in Cleveland is steadily taking an upward trend, and not only are the great majority of dealers finding business excellent but new ones are coming in every month. The Regal and Northern are now being sold, the Auto Repair Co. under the management of Louis Schmidt having the former, while F. J. Egensperger looks after the Northern interests.

Big Chicago Garage—The foundations are now being laid in Chicago for what will be one of the largest public garages in this country. Thomas B. Jeffery & Co., makers of the Rambler, in the name of the Rambler Garage Co. of Chicago, will erect at 1218 Sheridan road, a 45-foot addition to the present spacious garage, which now has a 100-foot frontage. The building will be three stories high, and will cost approximately \$20,000.

Many Cars in Pittsburgh—Pittsburg now boasts more motor cars for its population than any other city in the United States. The total value of the gasoline-propelled stock in the Smoky City is about \$5,000,000, according to recent investigations. There are exactly 1,198 machines, as the reports of City Treasurer John F. Steel show, in use and there are 100 more cars stored away in garages which are not being used this season. Since February 1, 1908, city licenses have been taken out for 842 machines of the larger types and 356 smaller cars. The average value of the larger cars is placed at \$4,000 and the smaller machines at \$2,000. Pittsburg is buying a constantly larger proportion of large and high-priced

cars also and in spite of the hard times the sales of this year are going to show some very interesting new records in totals.

Plant Moving—The plant of the Postal Auto and Engine Co. is now being moved to Cincinnati, Ohio. New designs for 1909 will be out shortly, consisting of several new styles.

Shanks' New Title—Charles B. Shanks, formerly with the Winton company and who lately joined the ranks of the dealers when he took the Chalmers-Detroit agency in Cleveland, has been appointed sales and advertising manager of the F. B. Stearns Co. Hal K. Sheridan, formerly of the White company, has been made assistant manager to Mr. Shanks. This change does not mean that Shanks will give up the Chalmers-Detroit. The Shanks Selling Co., at 1526 Euclid avenue, Cleveland, will also handle the Stearns. Identified with the Shanks company as manager will be R. H. Williams, formerly of Baltimore.

Another Bus Line—The western reserve of Ohio is to get another motor bus line as the result of the efforts of capitalists in Warren and Cortland, Ohio. A company has been organized by H. S. Post, F. M. Griffing, E. E. Faunce, J. H. Faunce and others to operate a heavy bus line on the pike road between these two cities and parallel with the main line of the Erie railroad. Five trips each way will be made every day. The fare has been fixed at 25 cents each way or 40 cents for the round trip and a 25-passenger bus will be purchased at once. The company proposes to carry light freight and express and will start a very agreeable innovation by way of taking these packages to the receivers' houses or places of business instead of leaving them at some downtown express office, as is often the case. The cars will be run by August 15 and the route is through one

of the prettiest sections of northeastern Ohio, where the towns have been handicapped for 40 years by the one-train-each-way service of the Erie railroad.

Shaw Takes Thomas—The Chicago agency for the Thomas Flyer has been taken by the Walden W. Shaw company, which is located at Michigan avenue and Twenty-first street.

Spreading Out—The Wilmington Automobile Co., of Wilmington, Del., is spending \$12,000 making its garage more commodious. The new front will be 83 feet wide and 57 feet deep. Combined with the old part, the company will have a depth of 114 feet, which will give it one of the largest places in the city. The valuation of the establishment is \$30,000.

Studebaker-E-M-F Deal—A deal whereby the Studebaker Automobile Co. of South Bend will market half the 1909 output of the newly-formed Everitt-Metzger-Flanders Co. of Detroit, has been consummated. The Studebaker people have contracted for 6,000 of the E-M-F 30-horsepower cars, which will be disposed of in the west and south through their sales organization, which comprises eight branch houses and nearly 5,000 retail dealers. The Studebakers will handle all the foreign business.

Stage Up Mt. Hamilton—Thousands of tourists who annually visit California have a great desire to ascend Mt. Hamilton and see the sights at the world-famous Lick observatory. It has always meant an exceedingly long, tedious trip, as no ordinary locomotive could make the climb. Heretofore a stage was the common method by which tourists reached the top. But John H. McGehee of Letcher's garage, San Jose, Cal., figured that a motor stage would be the thing. He secured a friction-driven Cartercar for the work. The accompanying picture shows the car at its daily work. The road has an elevation of

2,100 feet in a distance of 7 miles. The view was made in July but the perpetual snow will be noticed upon the ground and shrubbery.

Take the Acme—C. B. Richards and C. A. Vetter have formed a partnership and will handle the Acme in Pittsburg. Their headquarters will be at 5986 Penn avenue, East End.

New Branch in Chicago—The Olds Motor Works have decided to open a branch in Chicago at 2031 Michigan avenue, with Lafayette Markle in charge. The Oldsmobile formerly was handled in the Windy City by the Githens Brothers Automobile Co.

Gage Promoted—C. H. Gage, for the past few years manager of the Cleveland branch of the Fisk Rubber Co., has been promoted to the position of assistant sales manager of the Fisk Company at factory at Chicopee Falls, Mass. C. H. Collins, formerly manager of the Denver branch of the B. F. Goodrich Co., succeeds Mr. Gage. Mr. Collins has had 3 years' experience in the rubber business.

Calcutta Outlook—Imports of motor cars into Calcutta show a steady increase. The principal demand is for cars from 16 to 30-horsepower, and much importance is attached to the upholstery, which must be rich-looking and solid. Red leather enjoys the preference. Indian buyers, especially the natives, like vivid colors. More than 500 cars are now in use in Calcutta. India is daily becoming a very important market for motor cars and well merits the closest attention of American manufacturers. Many high-class and costly cars, which in most countries are quite out of the reach of the people, find good customers in India amongst the native princes, and their example is being copied by the wealthier merchants and the Parsees. There is no lack of good roads in India, and this, com-

bined with the great number of people of means, throughout the country, is bound to influence the development of the motor car business.

Compliment for Warner—³'Ideal conditions exist in your factory. I must congratulate you,' said J. F. Swank, state factory inspector for the northern district of Illinois to the officers of the Warner Instrument Co. of Beloit, Wis., last week after completing an inspection of the model plant, a veritable "Spotless Town." The factory is situated just over the Wisconsin boundary in Illinois.

Will Make Electrics—The Sterrett Automobile Co. of Denver has been incorporated for the purpose of manufacturing an electric car. The principal men behind the enterprise are L. G. Sterrett, who is president and manager, and Alva E. Brunson, secretary-treasurer. Both have practical experience in the electric car business, having conducted an exclusive electric garage for some time in Denver, and also having connection with construction works. They expect to have their first Denver electric on the streets within a few months.

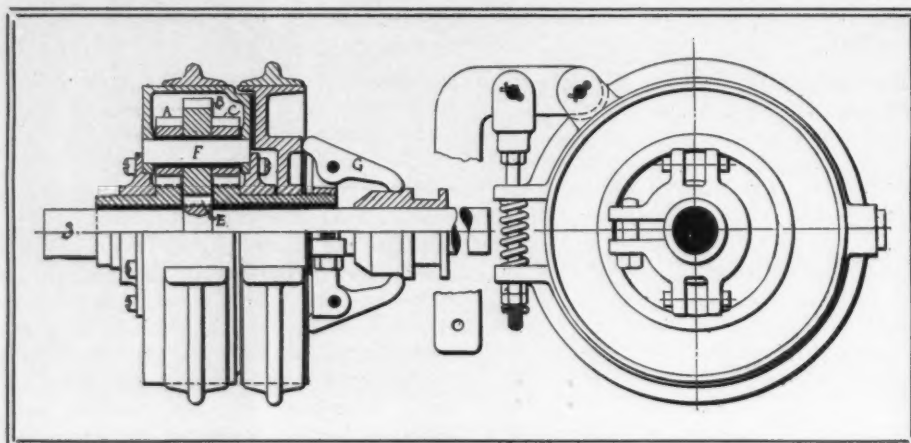
C. G. Huntington Dead—Charles G. Huntington, formerly advertising manager of the Electric Vehicle Co., died at his home in Hartford, Conn., last Saturday. He had been in poor health for the past few years but remained at his desk until about a year ago, when he resigned. He was connected with the advertising department of the Pope Mfg. Co. in the old bicycle days, previous to which he was engaged in trade paper work. He entered the service of the Electric Vehicle Co. in 1900 and consequently saw that concern rise as a factor in the motor car industry and later decline. He was always an enthusiastic wheelman and was the author of the Road Book of Connecticut, which went through several editions.



CARTERCAR USED ON STAGE ROUTE TO LICK OBSERVATORY ON MT. HAMILTON



Development Briefs



PLANETARY GEARSET OF CONTINENTAL ENGINE CO.

CONTINENTAL TRANSMISSION

The Continental Engine Co. of Chicago has a new planetary transmission, illustrated herewith, which is made suitable for motor vehicles of 10 to 12-horsepower, a feature of the transmission being that it weighs but 25 pounds complete. The main shaft S, $1\frac{1}{4}$ inches in diameter, has the master pinion E formed integrally with it, and the set of three planetary gears A, B and C, are firmly placed together on one phosphor bronze bearing which runs on a hardened shaft F. Placed diametrically opposite to these three gears is another set of three, used to balance the gearset. The teeth are all cut to ten pitch and hardened. Fiber washers are used to do away with the metallic sound so often noted in planetary sets. The high-speed clutch, seen at the right of the illustration, is of the disk type and simply clamps the case, allowing of no side pressure on the gear. The clutch face is of fiber. Bronze is used for the bearings on the mainshaft. The fingers G for operating the clutch are forged steel; the brake bands are metal-to-metal. In the right half of the illustration appears a hanging arrangement whereby the bands may be hung in such a manner as to quickly release and avoid dragging or clattering. Clutch adjustment is by means of an adjusting ring which may be set to any desired tightness by the loosening of one set screw. The transmission drum has a diameter of $7\frac{1}{2}$ inches and a distance over the drums of 4 inches. It is manufactured with a flange which can be bolted to their regular flange supplied on the ends of the shaft, thus making a very quick attachment.

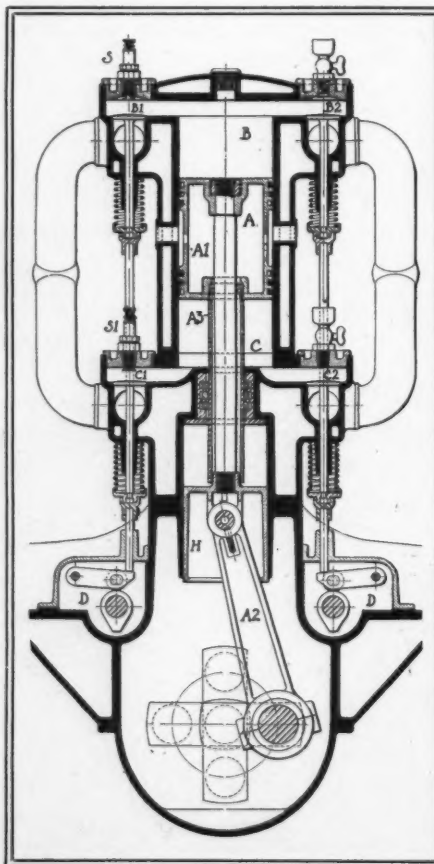
AUTOGAS TANK BOX

The Avery Portable Lighting Co., Milwaukee, Wis., now markets special boxes for carrying the Autogas tanks, these boxes being secured to the running board

of a car if desired. They are made of pressed steel, with a hinged cover, and are enameled. Boxes of this nature, besides protecting the tank from corrosion, add materially to the appearance of the car. It is not necessary to open the box except when replacing a tank.

DOUBLE-ACTING MOTOR

Charles Burgess, Wenona, Ill., has patented a double-acting gasoline motor, in which the piston A reciprocates between an upper explosion chamber B and the

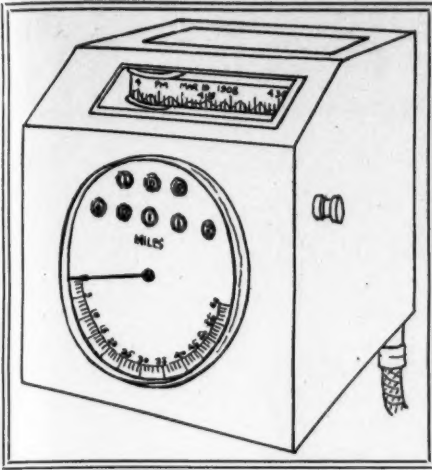


BURGESS' DOUBLE-ACTING MOTOR

lower explosion chamber C. Into the upper one gas enters past the intake valve B1 and exhausts through the exhaust valve B2. Gases enter the lower combustion chamber through the valve C1 and exhaust through the valve C2. The four valves, B1, B2, C1 and C2, are mechanically operated from camshafts carried in compartments D outside of the crankcase. The hollow piston A securely attaches to the piston rod A1, which at its lower end is secured to a crosshead H, which is reciprocated by the connecting rod A2, connecting in the usual manner to the crankshaft of the motor. The motor is both air and water-cooled. In regular operation air is forced into the crankcase by means of a centrifugal fan, gear-driven, and placed at the forward end of the motor. This is done in order to maintain a constant pressure of air within the crankcase, while a continuous circuit of air is passed up from the crankcase around the full length of the piston rod A1, through the tubing A3 which circles it. This air from the crankcase finds its way into the hollow piston A, which it cools. In the side of the piston are ports by which the air can find exit from the piston and thence through the cylinder walls. In this way the piston is cooled. The walls of the cylinder are cooled by water-cooling spaces. The engine operates on the regular four-cycle principle and has its cylinders cast in pairs with, as shown in the illustration, opposite valves. An Eise-man magneto furnishes current for the spark plug S and SI, both located about the intake valve. Lubrication is by mechanical force feed to all of the bearings. The motor will be constructed in two, four and six-cylinder types, which the maker claims should give horsepower equal to four, eight and twelve-cylinder motors of the single-acting type.

BABY GASOLINE TORCH

The Crescent Co., 103 West Adams street, Chicago, Ill., manufactures the Baby gasoline torch used for soldering and repairing in connection with motor cars and which has a burning capacity of 2 hours on one filling of gasoline. A feature of the torch is that it burns without air pressure, the gasoline feeding the flame through a wick. The gasoline is contained in a steel cylinder 3 inches high and 2 inches in diameter. Extending to the bottom of this cylinder is a tubing which contains the wick and which above the cylinder is curved in goose-necked fashion and takes the enlarged mouth-piece, or Bunsen burner. The goose-neck C part ends abruptly with the burner and has but a pin-hole B opening through which the gasoline vapor, conveyed thence by the



THE RECOMETRE FOR MOTOR CARS

wick D is fed to the flame within the burner. In lighting the torch it is but necessary to hold a lighted match for less than a minute beneath the goose-neck, this being sufficient to vaporize the gasoline in that portion of the wick, the lighted vapor being ignited by the lighted match at the head of the burner. Owing to the wick-feed it is possible to operate the torch upside down. Where the goose-neck enters the cylinder part, or reservoir, is a red rubber insulation A to prevent heat from the goose-neck reaching the reservoir.

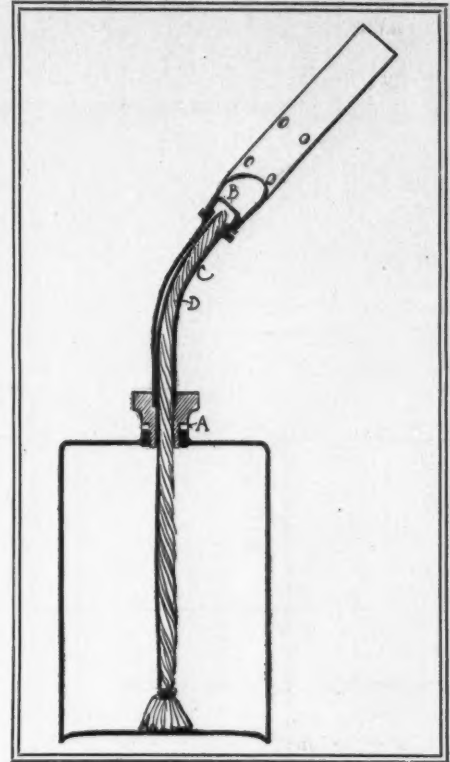
OWENS' TIRE REMOVER

H. M. Owens, 710 Fillmore street, San Francisco, has a tire remover, illustrated herewith, which is a particularly valuable tool for the removal of tires in that it will loosen and remove different styles of tires from different styles of rims. It is adjustable and may be used for any size of tire casing. Particularly noticeable in this design is the use of the compound lever system, thereby enabling the persons removing the tire to obtain the best results with the least expenditure of energy. The complete tool is but 20 inches long and weighs 3 pounds. It consists of a trunk portion A, the lower end of which B is adapted to rest against the clincher or other rim while the upper end C is rounded, being intended to bear upon the side of the casing when it is desirable to force the casing in, out of the clincher lips. At-

tached to this trunk are two working hooks, D and E, both of which may be detached and attached by the bolt passing through any one of the four or five holes in the trunk part A. To still further vary the usefulness of the working hook D, it is provided with two holes for the bolt attaching it to the trunk part A. The hook E is fitted with a gripping end F intended to seize the side of the casing or grip the wheel rim. The hook E is of sufficient diameter to encircle the tire.

THE RECOMETRE

The Recometre manufactured by the Recometre Co. of America, New York, is a small device which, when attached to motor cars, records on a ribbon the exact performance of the car, recording the miles traveled per day, the exact number of minutes required for each mile and $\frac{1}{2}$ mile traveled, the number of stops made, the length of each stop, the exact time of the day when each stop was made, and the number of minutes the car was standing still. The object of an instrument of this nature is to furnish superintendents and owners of taxicabs, other public conveyance motor vehicles, and those having charge of commercial motor wagons, at the end of the day with an absolute and reliable account of the day's performance. The Recometre, compared with the speedometer in size, is four or five times as large, measuring 5 inches by 5 inches by $5\frac{3}{4}$ inches and weighing 5 pounds. In general operation it is carried on the dash and is driven from the front wheel of the car by a flexible shaft, much as is a speedometer. It is a combined clock, showing the time of the day, as well as a calendar for every day of the year, every hour of the day and every minute of the hour. All records are made in ink and the tape on which these are made can be kept and used for record purposes. The clock mechanism is used to drive the tape or ribbon, and the markings on it are made by the speed-measuring part through the flexible shaft. The tapes on which records are made are divided by vertical lines, the space between each two lines representing a minute. The hours and half hours are marked on the tape as is

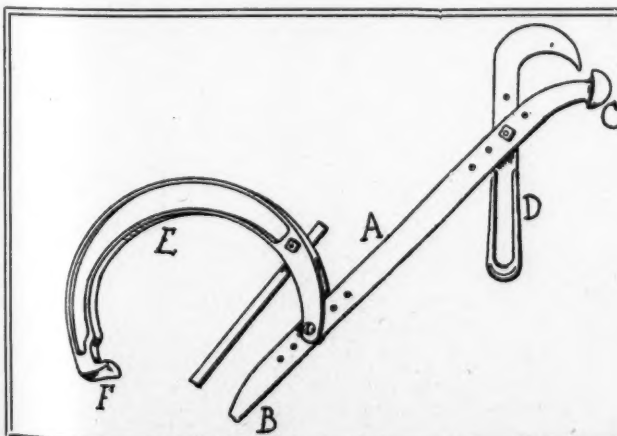


BABY GASOLINE TORCH

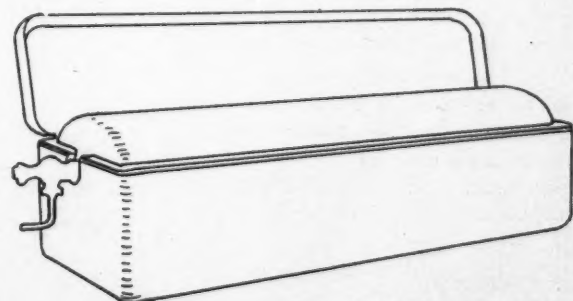
the date. Through a glass in the sloping cover of the instrument is always visible a portion of the traveling tape and the driver can see at a glance the record of each 30 minutes.

ANTI-BONNET RATTLER

The Hartford Rubber Works Co., Hartford, Conn., has introduced a little device to prevent rattling of the hood or bonnet of a motor car. To prevent rattling, not a few makers have used the strap across the center of the hood, securing it as tightly as possible to the frame of the car at either side. The Hartford anti-rattler consists of a strip of flexible rubber 1 foot long, 2 inches wide, $\frac{1}{4}$ inch thick and slotted at the end. When placed over the center of the hood the ends of the leather straps are drawn through the openings in the rubber strap at either end, and then buckled down firmly on the side of the hood.



OWEN'S UNIVERSAL TIRE REMOVING TOOL



CONTAINING BOX FOR AVERY AUTOGAS TANK



Brief Business Announcements



Los Angeles, Cal.—The Turbine Motor Car Co. has been incorporated with a capital stock of \$150,000.

Springfield, Ill.—The James Motor Express Co., of Chicago, has increased its capital stock from \$8,000 to \$10,000.

New York—W. F. Polson, of Buffalo, who manufactures wind shields and tire tools, has opened a salesroom at 1775 Broadway.

Chicago—B. C. Buxton has resigned as secretary and treasurer of the Walden W. Shaw Co., agent for the Berliet and the Thomas Flyer.

Newark, N. J.—The new building for the Ellis Motor Car Co., at 124-126 Washington street, is to be ready for occupancy by September 1.

Harrisburg, Pa.—The Harrisburg Auto Tire Repair Co., of 5 North Thirteenth street, has opened a repair shop for vulcanizing and repairing tires.

Boston, Mass.—A. F. Neal, who has the local agency for the Baker electric, has established headquarters at 10 Columbus avenue, in the Motor Mart.

Temple, Tex.—J. F. Robinson, of San Angelo, has completed plans to run a motor bus from Temple to Marlin. The service was inaugurated July 27.

Albany, N. Y.—The Manhattan Beach Transportation Co., of Brooklyn, has been incorporated with a capital stock of \$1,000, and will operate a garage.

Milwaukee, Wis.—The Solliday Motor Car Co. has filed an amendment to its articles of incorporation increasing the number of directors from three to seven.

Greenwich, Conn.—Aaron T. Demarest, president of the carriage and motor car manufacturing firm of A. T. Demarest & Co., died suddenly of ptomaine poisoning.

Buffalo, N. Y.—The Swinehart Clincher Tire and Rubber Co. has just announced that its Buffalo representative now is the Buffalo Wagon Works, 113 Carroll street.

Kansas City, Mo.—Plans are under way for the new Moriarty garage, which is to be built at 1508 Grand avenue. The new building is to be of concrete, and will cost \$20,000.

Owosso, Mich.—The Owosso Truck Co., successor to the Reliance Motor Truck Co., has purchased the site of the Estey furniture plant and will erect its new factory there.

Detroit, Mich.—Fred O. Paige, well known in insurance circles, has given up that line of business, and will go into the motor car field. In the future he will be connected with the Reliance Motor Car Co. in this city.

Los Angeles, Cal.—Work is soon to commence on the erection of a new garage for the White company.

Newark, N. J.—William Bowden is erecting a garage at 401 Clinton avenue. Mr. Bowden does not intend to represent any machine, but will simply do a general storage and garage business.

Minneapolis, Minn.—The Keith Co. is at work on plans for a garage to be built at 1900 Lyndale avenue for M. H. Davin. It is to be a two-story brick structure, 100 by 135 feet, and will cost \$12,000.

Fond du Lac, Wis.—Harvey Smith has opened a garage at 20 East Second street. He will operate a repair shop in connection. Mr. Smith has been with the Crescent garage for a number of years.

Murfreesboro, Tenn.—A motor bus line has been started between this place and Woodbury. The new line is to be under the management of Hartsfield & Son, but will be operated by Captain Ben Puckett.

Los Angeles, Cal.—The Riverside Auto Transfer Co., owner of the Glenwood Mission garage, has been appointed agent for the White steam car in Riverside county. Fred W. Miller is the manager of the company.

Syracuse, N. Y.—The Iroquois Motor Vehicle Co., of Seneca Falls, N. Y., is installing in connection with its Syracuse business a well-equipped machine shop, garage and body-making, painting and upholstery departments.

Eau Claire, Wis.—Ralph M. Burdick has sold his interest in the American Motor Co. and will manufacture motor cars in the Kleiner building on Water street. The enterprise is under the name of Burdick Motor Car Co. The first car will be listed



Dover, Del.—Baltimore Taxicab Co., capital stock \$150,000.

Chicago—Universal Automobile Appliance Co., capital stock \$20,000, to manufacture and deal in motor cars and appliances. Incorporators, C. Anred and R. P. Bates.

Akron, O.—Palmer-Hawkins Rubber Tire Co.; capital stock, \$10,000. Incorporators, M. R. Palmer, N. M. Palmer and G. W. Hawkins.

New York—Elite Motor Service Co.; capital stock, \$100,000; to manufacture, maintain and operate motor cars.

New York—Renault Freres Selling Branch, Inc.; capital stock, \$100,000; F. Renault and C. Richardiere, of France, and Paul Lecroix, of 275 Central Park West, New York City, are named as the incorporators.

New York—Standard Horn Mfg. Co.; capital stock, \$1,800; to manufacture motor horns, etc.

Asbury Park, N. J.—Zacharias Garage Co.; of Asbury Park; incorporators, C. R. Zacharias and F. C. L. Martin; to conduct a motor car garage.

at \$5,000. It is a six-cylinder, 85-horsepower machine, with a seven-passenger touring body.

New Albany, Ind.—George Straub is the prime mover in a company now in course of organization for the purpose of running a bus line from this city to Corydon. Straub is now operating a stage line between the two places.

Wichita, Kan.—Thomas Cory, of Coldwater, is about to start a motor bus line from this town to Belvidere and Greensburg, and also to Englewood. He has purchased a 40-horsepower Apperson limousine and will start the line at once.

Milwaukee, Wis.—The Johnson Service Co., Jefferson and Michigan streets, suffered a loss of \$21,000 by fire in its big garage at 347 Michigan street. Six motor cars, including one of the leased United States mail cars, were destroyed.

Boston, Mass.—W. Smalley Daniels, manufacturer's agent, representing several lines of motor requisites, has removed his office from the T. Alton Bemus Co., 358 Atlantic avenue, to larger quarters and is now in the Motor Mart, room 22, Boston.

Kansas City, Mo.—Work is progressing on the new garage of the Palace Auto Co., on Grand avenue, between Fifteenth and Sixteenth streets. Another new garage which is in the course of erection is that of the Midland Motor Car Co., also on Grand avenue.

Asbury Park, N. J.—A new garage is shortly to be opened here. It will be located at Main street and Fourth avenue. A new company has filed articles of incorporation, to be known as the Zacharias Garage Co. Among those interested in the new concern are C. R. Zacharias and F. C. L. Martin.

New York City—The Oldsmobile Co., of New York, has leased the building formerly occupied by Charles H. Proctor, on Fifty-eighth street, and will spend \$25,000 in remodeling it into a first class garage. The old establishment on Fifty-first street will be vacated as soon as the alterations are completed. The Oldsmobile company expects to be installed in its new home by October 1.

Milwaukee, Wis.—The Wambold-Brunchweiler Co., brass founder and supply agent, Appleton, Wis., with a Milwaukee branch, has decided to move its plant to Milwaukee. A foundry, office and finishing shop will be erected at Thirtieth and Lisbon avenue, Milwaukee, at once. There will be 12,000 square feet of floor space, most of which will be devoted to the manufacture of motor car lamps, shield frames and motor specialties in brass. The foundry will be ready October 1.